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The Trend Towards Economic Planning[1]

I

Let me—somewhat outside the main theme of this paper—begin by suggesting that the term "Economic Planning" and perhaps still more bluntly "Planned Economy" contains a tautology. This is even more palpable in the languages which do not exalt the concept by the use of a Greek word—for instance in German "Planwirtschaft" or in Swedish "planhushållning." The word "economy" by itself implies, of course, a co-ordination of activities, directed towards a purpose. It implies a subject, a will, a plan, and a rational adaptation of means towards an end or a goal. To add "planned" in order to indicate that this co-ordination of activities has a purpose, does not make much sense or cannot, anyhow, be good usage. Language, as we know, is full of illogicalities. But seldom do they, as in this particular case, derive directly from the learned idiom.

The reason why this tautology was necessary to express the thought clearly, is that the term "economy" was already being used to express the teleological concept of the non-purposive achievement of a purpose, and was thereby depleted of its original or common meaning of intentional activity. This notion of an automatic direction of economic life towards an inherent goal, was the fundamental metaphysical value notion underlying the economic doctrine of late eighteenth and nineteenth century liberalism. Inherited from the philosophy of Natural Law, it rationalised the entire system of hidden political premises that are often referred to as *laissez-faire*. Not to get stuck at the very start, I must now decide to abstain from the temptation to analyse further the liberal economic

[1]The present paper contains the material prepared for the Ludwig Mond Lecture of this year, delivered in Manchester, 13th March, 1950. Some of the main thoughts and particularly the introductory analysis were earlier suggested in my installation lecture as Lars Hierta Professor at the Stockholm University, 31st March, 1935 (*Samhällskrisen och Socialvetenskaperna*, Stockholm, 1935).

doctrine, characterised by this teleological notion of "non-planned planning," and its relation to the societal structure of that time in the countries, particularly England, where this strange doctrine was developed and elaborated to explain reality, in terms of pretended objectiveness, but in line with dominant interests.

In the history of doctrines this tautological notion, "Economic Planning," signified a conscious break with liberal economic thinking. Let me stress right here that this anti-liberal idea of a deliberate planning and direction by the State of production and distribution, did not emanate from Marx and has, indeed, very little to do with Marxism in its historical form. I don't even believe the term "Planwirtschaft" can be found in any one of Marx's works. Marx's principal idea was, as anybody knows, that after a revolution, when the "expropriators were expropriated," the proletariat in temporary possession of dictatorial power would begin the destruction of the state as being the institutional expression and form of class society. What finally would emerge after the "withering away" of the State would be the "State of liberty."

Even when Marx was farthest away from this most simple scheme, there is in his writing very little thought given to the actual organisation of the "class-less society" where "everybody contributes according to his capacity and is satisfied according to his needs," and still less to the economic policies of the State which were to be followed after the revolution in order to reach this transformation, or, rather, liquidation of itself. And the very idea of introducing, peacefully and without revolutions, planned State controls to change and adjust the basic structure of a national economy, which is to-day becoming the general thought structure of economic policy in Western countries, is what the Germans would call *systemfremd*, entirely foreign to his way of thinking.

This, I believe, though I cannot develop the theme here, is related to the fact that Marx's "scientific socialism" was basically itself a system of doctrines founded upon very much the same teleological concepts as economic liberalism. As a matter of fact, the so-called pre-scientific socialists in France

and, more particularly, in England at the end of the eighteenth and the beginning of the nineteenth century, were in their scheming about a deliberate and radical economic reorganisation of society much nearer modern thinking in terms of economic planning than Marx ever was or anyone among his immediate followers. Indeed, it was their reasoning in terms of economic planning, which doomed them as "unscientific" in Marx's judgment; and his own theory pretended to be "scientific socialism" exactly because it did not take recourse to planning "Utopias" but only analysed, *in futurum*, a predetermined natural development. This difference is one of the reasons why I hold that it would be interesting to take up those earlier socialist writers for more intensive studies from viewpoints arising out of present-day problems and controversies.

The two facts, one, that in Russia the dictatorship of the proletariat did not become a passing phase after the Revolution, as would have been in accordance with Marx's prognosis, and, two, that within this system Marxism became developed into a State planning doctrine, which it never was before, do not contradict my earlier thesis.

On this point I would like to draw a very sharp distinction, and also stress a limitation for my further discussion of the trend towards economic planning. I believe that there is a fundamental difference between, on the one hand, the economic planning which has followed upon political revolution in Russia and other, mostly industrially undeveloped countries in the East and, on the other hand, the economic planning which is gradually becoming the recognised frame of economic policies in Western democratic, industrialised countries. Analogies, in our part of the world drawn sometimes by the propagandists of economic planning but, as the East-West political tension develops, more often utilised by those who want to deprecate economic planning, are almost always false analogies. The communists never make such analogies, but maintain that there is a basic difference between the two types of economic policy. On this point I am inclined to agree. In the following I will discuss economic planning exclusively as it is appearing in the highly industrialised Western

democracies. More specifically, I will refer to England and the Scandinavian countries where the development has been so relatively similar, and present conditions are so equal, that a general analysis can disregard differences.[1]

II

If I am right in maintaining that economic planning is not a derivative of Marxism, I am, of course, quite aware of the fact that the idea has early been nurtured within the very un-Marxian socialist movements of our countries. As I mentioned, it has long roots back in the thought products of the so-called "pre-scientific" or "Utopian" socialism, and in humanitarian or Christian radicalism and reformism through many centuries. But as a frame of political thinking it has been prominent also in conservatism of various brands, even if there it was usually not, to the same degree, developed into a programmatic concept. To the socialists, economic planning was instrumental in order to raise standards of security and welfare for the broad masses of the people. In conservative thinking planned State interventions were required to strengthen the country militarily, to "protect the productive forces," to secure a "just reward" to social classes deemed of particular importance—usually the propertied ones—and, generally, to preserve and fortify the existing social order and the class structure of society.

From the point view of its political content, the concept of a planned economy was, thus, from the beginning a motley notion, wherein many different streams of political strivings and thought traditions had merged. In itself it did not define the goal, *i.e.* the purpose and direction of the economic planning. The common characteristic was simply the denial of the liberal doctrine of an inherent natural harmony of interest in society which made a "non-planned planning" conceivable. For a long time, and actually to a considerable extent even to-day, the idea of economic planning was blended with various

[1]The limited space at my disposal in this paper precludes me from including other Western countries in the analysis. I should then have had to deal with a number of differentials, though mostly of the character of nuances.

portions of economic liberalism. And in practical politics the strivings for economic planning were canalised into redistributional tax reforms, social welfare policies and protectionistic measures. Economic planning in its modern form of an explicit and consistent ideology did not become politically important until after the onslaught of the successive and cumulative waves of violent economic crises, the one piling up on the crest of the other, a development which had its beginning with the First World War and the end of which is not yet in sight.

Historically, economic planning is, thus, in our countries very much a product of the gradual development of economic life itself, and has been spurred and brought to completion by economic crises. And this is one of the main thesis of this lecture and also a definition of the analysis that I want to sketch : in the development of economic planning in our part of the world, ideas and ideologies, theories and propaganda, political programmes and political actions, directed consciously towards promoting a rational economic planning of society have played an altogether insignificant rôle. The present situation, as I have already pointed out, is in countries like England and Scandinavia characterised by the fact that State economic planning and direction have now become the almost generally accepted basis for economic policy, even if the fight still goes on between political parties and schools of economists, and will continue to go on, concerning differences of aims and means which, however, in perspective, are very minor indeed. The volume and diversification of State interventions actually serving this overall planning and direction at the present time would have been undreamt of a generation ago. All this has not come about as a consequence of rational political deliberation. As a quantitative measurement would show, the overwhelming majority of books, pamphlets, articles, speeches, *i.e.* the bulk of expressions of conscious intellectual thinking, during this period and up till recently, has been directed against economic planning. Governments and parliaments have with us never, at any particular time, made up their minds that they really wanted this type of economic policy. The State and the citizen has, step by step, been

forced into taking over more and more responsibilities for the direction and control of economic life by events, not by conscious choice. The regular sequence has been that State intervention preceded economic planning.

For during the long development which has finally landed us in the present situation, the State interventions have originally been introduced *ad hoc* to serve limited and temporary purposes, often to meet an immediate emergency of one sort or another. At least until fairly recently, they have been called forth and administered by political forces which have explained themselves to be, in principle and practice, adverse to economic planning, and which have also tried their best to avoid their incorporation in a planned and co-ordinated economic policy. The interventions have usually been, not only motivated by a pending crisis, but designed accordingly as temporary and limited measures. I do not need to stress the difference between this historical development and the introduction of overall economic planning by fiat in the U.S.S.R. or the other Eastern states.

Instead of State intervention being the expression of a conscious attempt towards economic planning, the historical and causal order has in our countries regularly been, as a matter of plain historical fact, rather the contrary. It was usually the growing mesh of unco-ordinated State interventions which called for co-ordination. The demand for order and rationality has been an afterthought, when it was becoming apparent that it had been an illusion to believe the need for interventions to be temporary, and when the interventions proved to be cumbersome to administer and irrational and damaging in their secondary effects. In this situation, when an abolition of the interventions was out of the question for practical reasons, the politician and public servant with liberal inclinations often found himself as the proponent in one field after another of central economic planning. It has been part of the irony of history during the last decades, that State planning was often the more "liberal" alternative to the veritable mess created by unco-ordinated and disorganising State interventions.

Everybody acquainted with the internal political history of the countries in our part of the world knows that this is the road we have travelled towards economic planning. Some professors, who manage to escape from having their thinking controlled by a too minute awareness of the facts, have, as we know, succeeded in remaining faithful to the old liberal doctrine. They indulge freely in the popular fallacies or less-than-half-truths, that the State interventions have sprung from a desire to tamper with economic life, and that the economic maladjustments in the world are the results of these interventions. And so great is our nostalgia for the times before the wars and the crises, that if they write well, as indeed they often do, their books will be read and quoted as gospel truths by businessmen and politicians, whose daily labour it is to regulate markets and direct national economies. I suppose this strange pleasure-seeking is of the type some psychologists call compensatory satisfaction, as when in catholic countries the modest prostitute carries a golden cross around her neck in memory of her virtue or, in the opposite direction, when so many timid and respectable good citizens enjoy reading horrible murder stories.

My discussion in this paper of the trend towards economic planning will not be centred upon the theoretical content or political justification of an economic doctrine. I am solely interested in a complex of institutional facts, resulting from the historical development during recent decades in certain countries. You should, therefore, not expect me today to state the case against *laissez-faire*. Implicit in my whole argument, however, will be the inference that the price mechanism does not function any longer to restore equilibrium and that a free economy under present circumstances is not a very practical proposition. Neither am I going to state the case for or against economic planning, except that at the very end of my paper, I will shortly discuss the chief difficulties, or the "systematic defects," of planning in our democratic countries in the present stage. My intention on this occasion is to ignore the doctrinal controversies and, instead, as a social scientist, raise and attempt to answer the deeper questions of

causation : How have we come into the present situation ? What are the underlying driving forces within the nations and in international relations ? In which direction do the trends move our society ?

III

One main assumption, which I will attempt to illustrate later, is that the economic upheavals beginning with the First World War have been a main cause in the creation of the present situation, characterised by a very large and steadily growing volume of State interventions and a now almost general acceptance in our countries of the necessity of rational economic planning. Implied in this assumption is the belief that there is very little hope that we ever again will see a stable world economy of the old quasi-automatic type re-established.

One of the reasons why this last judgment seems warranted is that people generally do not any longer expect the upheavals to end. In this respect the situation was different after the First World War. There was, then, a common expectation of a return to normalcy, an expectation which as usual, according to well-known laws of economics, tended to work for its own realisation. In spite of this stabilising force the waves of crises continued. After the Second World War even this expectation is missing.

But I believe that there are other and still deeper causes underlying the development towards State intervention and economic planning which would be at work, though much more slowly, even in the absence of world wars and world crises. I would now, for a moment, like to turn our attention to these secular social processes. They have importance for the question whether the development is easily reversible or not.

We are rightly accustomed to characterise liberal economic theory as, on the one hand, static and, on the other hand, atomistic. The society, of which this theory was a very idealised rationalisation, had a basic assumption, without which it could not function, *i.e.* would not remain for long a liberal society, namely a very specific combination of immobility and mobility. The social frame had to remain

stubbornly unchanged. This was possible to conceive of under the atomistic assumption. The main thesis of the theory of perfect competition was, as I will be allowed to recall, that *if* the economic units are infinitesimally small in relation to the size of the market, and *if* they don't act together, then none of the units can, by his actions, have any influence in the market. If he should get the idea to change his behaviour—*i.e.* his demand or supply—it would have no effect at all on the aggregate demand and supply curves and, consequently, none on the price. The market and the market price were, therefore, to him, whether he was a buyer or a seller, independent variables, a set of objective conditions for his behaviour, as entirely outside his own control as the seasons and the weather, to which he had to adjust or perish. The price formation in the market performed under these assumptions, smoothly and continuously, the "function" of restoring equilibrium after every change of the primary conditions.

This perfect market has never existed. But the important thing is that for a long time reality has been moving steadily further and further away from this liberal idealisation. Technological and organisational developments have been increasing the size of the units in relation to the market. At the same time the individual units have found the means to combine. They have thereby come into a position where they can influence the market and manipulate the price. The market and the price have then lost their character of being objective conditions outside the influence of the individual units to which they merely had to adjust. The markets have become consciously "regulated" by the participants, and when the atomism is gone, the assumed static institutional framework is not protected any longer, Instead of obediently adjusting themselves to a given framework of society, which was the liberal dictum, the individuals are starting to adjust society according to their own interests.

I do not need to recall to what extent at the present time practically all markets are manipulated. Many markets are dominated by one or a few sellers or buyers. And apart from

these cases, practically every single individual in our countries, who has something to sell or who earns an income or seeks a profit, is associating himself with his compeers with the intention of influencing the conditions under which he is acting.

To these institutional changes correspond fundamental changes in peoples' attitudes to the economic processes in which they are participating. As usual, these psychological changes are partly causes, partly effects of the institutional changes. And they have, in addition, their causal relations to industrialisation, increased geographical and social mobility, intensified intellectual communication, secularisation, and many other social changes, quietly but steadily going on in our civilisation. "Folkways and mores" are in this process gradually broken down. The almost reflexive, never questioned norms for behaviour of the old society are generally losing their impact and a reflective weighing up of rational interests is substituted for it. People are increasingly less inhibited by social taboos and traditions. They are thus becoming more enterprising, more experimental, more sophisticated, more hedonistic, more "economically rational."

All this has, indeed, a much wider application than to economic behaviour in relation to prices, wages and profits. It has, for instance, been studied rather intensively in the field of family morality. The pattern of birth control did not gain its spread, so beautifully revealed in vital statistics, from the diffusion of knowledge about birth control or the availability of technical contraceptives, as is often popularly assumed. The still in all social classes most widely used means of contraception are not technical at all and have always been known to everybody. Birth control is, as a matter of fact, directly caused by a more rationalistic attitude to the family institution. "Planned parenthood" is, indeed, in social history a phenomenon very intrinsically related to planned economy. I have made this parallel to birth control, not as an intellectual pleasantry, but most seriously. I want to bring home how deep are the social and psychic causes of the destruction of liberal economic society. To fight against economic planning in our societies

is about as difficult and as hopeful as to fight against birth control.

Liberalism was a rationalistic philosophy. Its contribution to the science of psychology was shallow hedonism and the theory of intellectual associations. In economics its rationalistic principles were elaborated in the marginal theory of value and in the utilitarian deduction of general welfare out of the enlightened self-interest of the individual. But when rational hedonism had actually begun to spread and people really started to think and act a little more like the liberal theory's "economic man," the bottom fell out of liberal economic society.

The explanation of this paradox is that, contrary to all the theorising about man of this intellectualistic and rationalistic liberal philosophy, its basic assumptions—atomism and a static frame of society and static social attitudes—implied the prevalence in society of human beings who were the very opposite to the rationalistic "economic men" of its theory. They had to be traditionalistic, strongly inhibited by existing taboos, never questioning, non-experimental, non-reflecting conventionalists. It is no accident that Victorianism, the heyday of conventionalism, was the cultural bloom of liberalism. Seldom in the history of mankind has a social philosophy been so naive about its own social and psychological foundations as this one, whose honest pretension it was to be so intellectualistic and so rational.

Here again we can observe a fundamental difference between the way in which economic planning has come to the East and the West. In the East this psychic and social development, which I have just sketched, had barely started. Planned economy was suddenly clamped down upon a largely illiterate, pre-industrial folk society. And after some insignificant intermezzos, when Westernised intellectuals attempted to rationalise social attitudes—*e.g.* in family legislation—all the forces of the State were directed strongly against this and towards stabilising and conventionalising people's behaviour patterns in accordance with the proclaimed aims and values of the Soviet State. It is interesting to note that the Communistic State, when forcibly lifting the population out of the

inhibited and impoverished stationary life of folk society, is purposely creating a type of human being who would—with slight modifications of ideologies much more than of fundamental attitudes—make even liberal society function, while liberal society was destroyed because people there started to behave just as rationally as its theory always had wrongly assumed that they did.

IV

This "sophistication" of attitudes in Western countries leads to State interventions and, in the end, economic planning, along several routes. One route is through its effects upon the market. When the individual units in the market become big or when they join together in order to influence the market, this is definitely against the liberal rules of the game. Equilibrium is then not guaranteed as an automatic result of atomistic adjustment, but may have to be restored by intervention from outside. Expressed in our technical terms, this implies that the price mechanism no longer "functions" as it was supposed to function. The organisation of the market leads to the disorganisation of society and calls for State intervention. The initial tendency to disorganisation is apt to become particularly strong when several markets are becoming organised in this way, if they are related to one another through the mechanism of price formation as, *e.g.* the labour market and the several commodity markets, of which some handle commodities which are cost elements in the production of commodities in other markets.

A large step towards economic planning is taken when in a market individual bargaining is replaced by collective bargaining. Once this process has started, it rarely stops short of the creation of nation-wide organisations of not only employers and workers in the labour market, but buyers and sellers in other markets as well, which, through elected officers and appointed officials, make binding agreements for all their members in regard to prices, profits and incomes. Terminological inhibitions should not conceal from us the fact that these

organisations thus become public bodies and decide upon public policies.

The State cannot possibly for long leave it to the directly interested groups to regulate the markets between themselves. The combines have effects that are too great and too wide. Their regulations imply the usurpation of the power of taxation. The organisations determine between themselves within broad limits what is produced, what is consumed, how the produce is distributed, the rate of investment and progress in different branches, and even the price trend and the value of the money in a country. The further this tendency develops, the more certain it is that all this will have to be controlled centrally and co-ordinated by the State.

If it sometimes looks as if the State left it to the powerful organisations themselves to fight it out and come to an agreement—as, for instance, in the labour market—this can be done only because there is felt to be a fair balance of strength between the buyers and the sellers in that market. These organisations then actually function as organs for national policy. An indication of this is the State's interest in guaranteeing that the organisations are constituted on open and democratic principles, and that they function under the restraints of adequate publicity like other public organs.

Many of the most important policy decisions are then taken outside parliament. This can be permitted as long as the organisations succeed in settling their differences peacefully and efficiently and are felt to carry into effect the public will, and as long as a fair amount of national co-ordination is preserved. As national economic planning proceeds, we witness more and more frequently the still higher integration of market regulations through combines, when general price and income agreements, covering many different markets in a nation, and, perhaps, almost the whole community, are made after a many-cornered collective bargaining, where the organisations of workers, farmers, industrial employers and perhaps bankers and consumers participate under government leadership.

I believe that, as years pass by, this last mentioned form of general income settlements between the main organised

interest groups in a national economy will gradually become the rule. All prices and wages and, in fact, all demand and supply curves, are then in a sense "political." We are as far away from the liberal economic theory's perfect market as possible. As increasingly the problem of balancing aggregate demand and supply in the whole community becomes a central issue in national economic policy, this type of nation-wide negotiations and agreements regulating everybody's income will become a necessary basis for all the rest of economic planning.

The government and the administration, representing the point of view of central economic planning and backed by a parliament with sovereign powers to legislate, will then gradually find it to be an equally or more important function to lead the negotiations and to control the compromises between the nation-wide interest organisations in the corporate sectors of society, than to lead parliament itself.

Here again we can observe an important difference between the development in the West and the East. The interest organisations have, to begin with, a very different history, and from their different origins they preserve a different spirit. With us the organisations have not, as in the East, been hastily created to serve as organs of the State. They have slowly developed out of the spontaneous interests of the participants, in the beginning often against the liberal State's attempts to suppress them. They have only gradually acquired power and become *de facto* public organs. But they have preserved as much independence as has been found compatible with a fair degree of co-ordination in a planned economy. They will undoubtedly be brought under closer and closer State control. But they will nevertheless come to represent an element of democratic decentralisation in economic planning, which is not present to the same degree in the Communist States where such organisations much more unreservedly are organs for State policy.

In the countries, which I have chosen as touchstones for my analysis, namely Scandinavia and England, we had in good time furnished ourselves with strong and fairly efficient

States which were capable of taking over the new functions. It is interesting to note that it was early political liberalism which had made this preparation for a planned economy. Liberalism was the doctrine of a State with very limited responsibilities; but, within its realm, the State should be strong, incorrupt, and efficient. At the end of the eighteenth and the beginning of the nineteenth century, the political life and the administration in our countries were generally quite corrupt, inefficient, arbitrary, and rather lazy. More than a century ago liberalism began the very fundamental reforms of political parties, parliament and municipal representative bodies, and of the civil service, which gradually built up a set of traditions and an institutional apparatus without which economic planning could not so early and so fairly effectively have been incorporated in our public life. We may notice in passing that countries like the U.S.A. or France or Italy in this particular respect are facing a much more difficult situation. They have entered into an era of rapidly increasing public controls, and must attempt to administer them at the same time as they have to cleanse public life and build up an independent, incorrupt, authoritative, efficient civil service.

V

A second route leads more directly from the changed attitudes to State interventions and central economic planning. When people become sophisticated enough not to accept a passive rôle in the market but start to combine in order to regulate it in their own interest, they will also be rational enough to demand direct State interventions in their favour. This is indeed an old story. Farmers and industrialists have pressed for tariffs, workers for labour legislation and social security. As time goes on, people become conditioned to ask for ever larger and more radical State interventions.

Here quantitative changes bring about, in time, a qualitative difference. After a certain point, in one field after another, the mass of diversified State interventions have to be co-ordinated into unified structures of State regulations within a planned economy. It becomes less and less possible to hold

that ours is a "free enterprise" society with exceptions for a number of State regulations. The exceptions become the rule. And it will gradually have to be understood that ours is a centrally regulated society, leaving a certain amount of free enterprise to move within the framework set by State controls. The sanctity of private property rights, the liberty of the employer to hire and fire whom he wants when he wants, or of the worker to leave the shop if and when he desires, the free choice to invest, to produce, to trade, to move, all these time-honoured individual liberties are gradually edged into by public controls. And even if the old formulae are being used, this does not alter what is increasingly already a factual situation.

On this point it may be illustrative to analyse the development of the public budgets which integrate a certain type of State intervention and, in one way or another, even reflect the others. A steady rise in the size of the budgets and an increase level of taxation were secular trends in our countries long before the First World War. It would have continued under all circumstances, though probably much more slowly, even without the push of the wars and the crises. It is interesting to note what has happened to the very content of the science of public finance during this development.

Public finance was at first, and during centuries, primarily a study of the rational and economic conduct of the separate households of the State and the municipalities. Modern science took over directly from the cameralists. Taxes were studied from the viewpoint of their ultimate incidence and their just distribution among the citizens. The relation between the public finances and the total economy of a country was dealt with exclusively as a problem of a one-way relation of how the development of the total economy reflected itself in changes of the needs for public expenditure and changes in the yield of taxes and other public incomes at given rates. For at that time the public finances were not a large enough part of the total economy of a country to have any very significant influence in the other direction, *i.e.* on the business sector. And during this era, people, including the economists, were

anyhow not interested enough in directing the national economy to give importance to this other problem. This is the science of public finance we still find in our text books.

When the Great Depression set in during the 'thirties, public finances had already become relatively so large that a variation of public incomes and expenditures could have a substantial influence on the development of the total economy. And the interventionist spirit was rising. The science of public finance during the 'thirties became, therefore, focussed on the problem of how to manipulate the public budgets in such a way as to counteract business variations.

This second stage became very short. After the Second World War we are now in the third stage. Already something between a third and a half of the national income passes through treasury accounts and the trend is still rising. It then becomes impossible to distinguish a separate public finance problem any longer. Both the old text books and our discussion during the 'thirties of a financial policy designed as a counter-cycle, appear outmoded. The problems of public finance are now inseparably merged with problems of international trade and payments, wages and incomes, money and credit. The organising theoretical device becomes the National Budget, perceived of as the central book-keeping control in the service of an overall State economic planning. The National Budget accounts for the composition of the national income and its disposal for investment and consumption. In this National Budget the Public Budgets appear only as a set of items to be analysed as part of the whole.

All the problems of the two earlier stages of the development of the science of public finance still exist. But they are now integrated inextricably with all other economic problems and are subordinated to the one dominating question of the direction of the total national economy. This illustrates the impact of State intervention and economic planning on our thinking. In the short span of a lifetime the science of public finance has had its scope and content radically changed, not once but twice.

VI

In this development towards State intervention and, ultimately, economic planning, the existence and continuous pressure of the social question has played a determining rôle. With the rising social mobility and the ever increased volume of social contacts in modern society between people in different classes, and with the general rationalisation and sophistication of peoples' thinking, the economic inequalities gradually lost much of their unquestioned and respected appearance of being natural. In this setting, it was easily foreseeable that giving away the vote to ever larger strata of the population would initiate a political process towards redistributional reforms. Already Aristotle had foretold this. Actually, it is more to be wondered at, why it took such an extraordinarily long time for this process to gain real momentum. Apparently the property taboos were among the most stubborn inhibitions inherited from the old society.

When a hundred years ago John Stuart Mill made his compromise with socialism and formulated what was then called the "new liberalism," his main thesis was that, although in the field of production the economic laws had to be obeyed and should not be interferred with, the legislators should feel entirely free to change the distribution as they wished. We know, however, that even Mill, who tried so hard to be a free thinker, when he was faced with the concrete issue of a progressive income tax, declared that it would be worse than theft. I wonder what he would have thought if he had had a revelation of income taxes and death duties in his homeland a century later.

The drive for economic equality does not only express itself in progressive taxation and income redistributional expenditure schemes like social insurance. It enters into and determines the form and content of almost all State interventions. It thus also becomes one of the main driving forces behind the general trend towards increasing the volume of State interventions. Generally speaking, the disadvantaged groups in a democratic society have a palpable interest in

having individual decisions subordinated as much as possible to general norms laid down in laws, regulations, administrative dispositions, and semi-voluntary agreements between quasi-public interest organisations.

The factual basis for this interest in State interventions is, that when private relations are becoming public relations in countries dedicated to equality, the majority interest, which is the poor man's advantage, will be looked after. Income distribution has in our society the form of a pyramid. The poor are by definition the many. In a democracy with effective universal suffrage, this is one of the explanations why we are steadily proceeding in the direction of government control and direction. Even the conservative and liberal parties will, with us, have to become the vehicle for this development or else disappear from the political scene.

When housing and the erection of new homes becomes a public responsibility, it becomes social housing. Likewise, when the rentability of farming becomes a matter of public price fixing, the interest of the small farmer or the otherwise disadvantaged farmer is taken care of. When wages are becoming regulated by ever more inclusive national settlements, one effect is a tendency to diminish the wage differentials between different occupations and between skilled labour and unskilled labour. When commodities have to be rationed, the principle is again equality; and it might happen, as in England and Sweden, that families in the lower income groups actually are placed in a situation where they can increase their consumption of a rationed commodity in a general scarcity situation.

All this can easily be demonstrated statistically. Whenever a new State intervention or semi-public regulation is introduced, even if its purpose is quite a different one, it will in our countries tend to be utilised also as a means of equalisation. This is a general reason why State interventions are seen to be in the interest of the lower classes and actually are so, and why the drive for social policy becomes a pressure or a support for State interventions, even outside the sphere of distributional reforms properly. Practically all State

interventions are an occasion for, and become a means of, an equalising social policy.

At one point this drive for equality springs over into a more direct demand for State economic planning of production. When, as in our countries, the fiscal and social policies come within near sight of their economic limits, when the taxes are absorbing the major part of the incomes of the rich and are becoming very burdensome for people far down in the working classes, and when the envisaged social reforms are nevertheless by far not completed, then the will towards social improvement turns to the control of production. The question is then raised and increasingly pressed, what the State can do to rationalise industry and agriculture and, thereby, raise the total volume of the national product. Again it is very much a question of the gradual destruction of a powerful social taboo. John Stuart Mill would have been even more disturbed by this rapidly spreading interest in having the State use its power to rationalise and co-ordinate production than by our confiscatory taxation. But both roads lead to State intervention ; and State intervention demands co-ordination into a centrally planned economy.

VII

If I am right, we would thus by now in our countries have had a development towards economic planning, even if the history of the last three decades had not been loaded with two world wars and a sequence of violent world economic crises. In this particular respect as in so many others, the recent economic upheavals have only forcibly spurred a development that in any case was under way. Some broad hints may suffice to illustrate how the wars and the crises have pushed national economic planning.

To begin with, all sudden and violent changes, whatever their cause or character tend to decrease the respect for *status quo* and to weaken the inhibitions against inducing change through political intervention. In particular, the important property and contract taboos, so basic for stable liberal society, were forcibly depreciated when big alterations

were permitted to occur in the real value of currencies and, consequently, of incomes and costs, individual fortunes, debts, and obligations.

Furthermore, the very large State interventions, which in wars and crises simply had to be undertaken, made people increasingly acquainted and familiar with the thought, that interventions could be successfully undertaken. Every repetition fortifies these new thought patterns. People are "learning by doing," as a technical term is coined in America for a modern pedagogical trend.

The central economic planning in our countries, improvised during the First World War, was, as a matter of fact, technically not too unsuccessful, anyhow far less so than could reasonably have been expected. The State planning during the Second World War was technically far superior. Between the two wars there lies a period of insecurity and frustration.

This period opened with a rather commonly shared expectation and determination that the world should come back to "normalcy." Parallel to the demobilisation of the armies, a wholesale liquidation of the war-time regulations was initiated. But the expectation of a return to a balanced free economy was gradually broken. The chain of crises that followed ending up in the Great Depression during the 'thirties, called forth more and more of new State interventions. The interventions were, according to the general historical pattern I have described above, half-hearted and unco-ordinated, both nationally and, particularly, internationally.

It would be of considerable interest to analyse in some detail the economic development during this period between the two world wars from our special viewpoint in this paper, namely how it was conducive to speeding up the secular process trailing on anyhow towards a rising volume of State intervention and in the end the fairly general acceptance of the policy of national planning which is our present situation. This is not feasible in this context. But I cannot abstain from a few hints towards the very broadest of the generalisations which can be made.

For most,[1] though not all,[2] countries in Europe west of the Soviet Union—and also for America from 1929—the inter-war period, taken as a whole, was a period of relative stagnation, compared with the rapid growth of industrial production in the time before the First World War. In most countries in the industrialised Western Europe investment was lagging, capital depreciation was not always fully met, and new techniques of production and of management were not promptly and effectively introduced. The "dollar gap" after the Second World War is, in large part, a legacy from this period. The depth of this stagnation can only be properly appreciated, if it is recalled that the terms of trade during this whole era were particularly favourable for the industrial countries.

To this stagnation of investment and production corresponded the prevalence during considerable parts of the period in most countries of large scale unemployment. Unemployment became the dominant economic and social problem in the inter-war period. And it was gradually becoming recognized in our countries that the State had a responsibility to take economic policy measures to counteract unemployment.

The war had seriously dislocated the pre-war international trading system. Particularly as the rapid restoration of the gold standard at a high value of the national currencies was generally conceived of as not only desirable but necessary or even inevitable, countries were progressively compelled to raise protective trade barriers to defend their balances of payments. This policy soon got additional support, as one means of creating employment was through import restrictions. Actually, this unemployment policy represented a traditional and conservative approach as it implied a minimum of internal State intervention.

When in the later part of the inter-war period the Great Depression set in, the States became gradually prepared to attack the unemployment problem more directly, *e.g.* by

[1] *Economic Survey of Europe in* 1949, Research and Planning Division, Economic Commission for Europe, Geneva 1950, pp. 198 ff. See particularly the illustrative charts pp. 200—202.

[2] Sweden was one of the few exceptions.

intentionally unbalancing their budgets. These new methods of attempting a regulation of aggregate demand to equalize available productive resources were unorthodox and radical ventures at that time, though they seem very innocent and conservative, measured by what governments are prepared to do to-day after the further shock of the Second World War, and by the firmer and more explicit promises by the States to preserve "full employment." But even in its more modest scope during the 'thirties this policy required in a world setting of economic contraction a national protection of the "international monetary space for national economic expansion." In both cases the effects of the import restrictions were, of course, internationally self-defeating, as was well illustrated by the common expression during that time that the individual countries were "exporting" to each other their unemployment.

Even the international cartels, which flourished during this era, had often a similar motivation and had, on balance, a similar effect. From an international point of view, the worst feature of the international cartels was that they were nationalistic. A main element of their divisions of markets was fairly generally a mutual agreement between the producers not to invade each other's home market.

Meanwhile the development in the monetary field furnished the national governments with both good reasons and much more powerful instruments for cutting down imports than the old-fashioned customs tariffs. In the beginning of the 'thirties, the efforts to restore an automatic international currency system, which had been part of the "back to normalcy" drive, broke down. The Great Depression, which lowered the demand for all international goods and inhibited the flow of capital, soon found the countries in charge of "managed" currencies, potentially at least. Devaluations took place in some countries to the individual advantage of the devaluating countries. But generally governments were adverse to short-time fluctuations in the international value of their currencies. In a general setting of stagnation and unemployment, exchange controls of import trade and quota restrictions became prevalent.

To sum up, economic stagnation and unemployment and many other economic ailments called forth at an increasing rate large scale State interventions. Particularly in the beginning of the period, the interventions were mostly of the protectionist type and the development towards national autarchy which had existed as a compulsion during the war was continuing in peace time. The State interventions were not too well planned and co-ordinated nationally. The idea of a centrally co-ordinated economic planning was still shunned. Internationally the interventions were not co-ordinated at all and had, on balance, seriously disorganizing and generally hampering effects on world trade. They created or aggravated international crises which then, in their turn, had again to be met in the individual countries with new interventions, and so on, in a truly vicious circle.

Let me just, in passing, make the observation that the adverse cumulative effects *via* the international relations could for no single country be a good reason to abstain from attempting to control its own economy as successfully as possible.

VIII

And then came the new war. Europe has just passed the first reconstruction period, fairly successfully so far as concerns production and investment, which have been showing a steeply rising trend, very different from the period between the two wars. I will abstain from entering upon any analysis of the post-war economic development [1] and restrict myself to pointing out certain main elements of disequilibrium and instability in the present situation in Western Europe. My interest is all the time the specific one of how far they imply an inducement for the individual States to centralized economic planning.

The Second World War has, by enhancing violently a development which was already well under way, totally broken the foundation for a normal world trade equilibrium. Most countries of Western Europe will not, within the foreseeable future, be able to establish a balance of international payments

[1] See The *Economic Surveys* and particularly the last one, cited above.

without applying radical interferences in their international trade. I will have to leave this statement as a doctrinal assertion without giving the detailed reasons, but I want to add two supporting remarks. First, that the whole discussion whether and when Western Europe will be "viable" and able to carry on without American financial aid—a problem in regard to which there can be somewhat different views—has as its foundation the commonly agreed assumption that a very rigid system of trade discrimination against American goods will have to be maintained. Second, the drive towards freeing trade in Western Europe can, exactly for this reason, accomplish little in the direction of re-establishing a general world trade equilibrium, even assuming that it were successfully carried out. It might actually work in the opposite direction and increase the major disequilibrium. And, anyhow, not much is actually accomplished for solving even this minor problem and there are not good prospects that very much will be accomplished within the foreseeable future.

This implies that already because of the world trade disequilibrium the States will be compelled to control centrally not only foreign trade but, as a consequence, large sectors of their internal economy.

I come, thereafter, to the international capital market. It was in the time before the First World War a most important supplement to a reasonably balanced system of multilateral international trade, that there existed an international capital market and that short-term and long-term capital streamed from surplus areas to shortage areas. None of the classical authors would ever have thought of the possibility of a balanced international trading system in the absence of an effectively working capital market. The international capital market is now totally destroyed. Already before the Second World War and from the onset of the Great Depression, capital movements had ceased to be a force working towards maintaining and restoring equilibrium in international payments relations, and had become instead a force of international dislocation. For capital was now seeking security in the first place and, actually, streamed from the places where it was most needed. This was,

as we know, the immediate cause of the breakdown of the new gold standard in 1931. And it was the main reason for the introduction and acceptance in most countries of an exchange control over capital movements.

It seems improbable that an international capital market in the old sense can ever be restored again. We are trying to fill the gap by government credits. But, as a means towards creating equilibrium, government credits are a poor substitute. Financially, government credits have at least two serious drawbacks compared with private international banking. For one thing such credits will almost always be hamstrung by political considerations when they are given ; parliaments and congresses will always be biased and capricious in their rôle as bankers. Incidentally, this taking over by the State of the international banking functions is not very healthy for politics either ; governments will often be tempted to create political "situations" in order to get the credit bills passed by the congresses. The second weakness in international banking by governments concerns the very basis of international credit. While there was always a sort of wholesome presumption that international loans, when they were private loans, should be repaid—they were not always repaid but that is another story—almost the contrary is true in credit relations between States.

There has been a lot of irresponsible talking about restoring convertibility of currencies—and, unfortunately, also some irresponsible acting. But if international trade will have to be rigidly regulated, if capital exports in most countries will have to be checked and controlled, and if we are, anyhow, not going to see recreated an international capital market, then "convertibility," if it is "restored," will be a very different thing from what it once was and what we still mean when we talk about it. This unfortunately implies, to put it bluntly, that the whole discussion is either rather naive or not quite honest.

These fundamental changes in international relations, which I have here in an abstract and generalising way exemplified, will have the effect of delivering the economies of all but

creditor countries to the necessity of a very deep-going national economic planning.

Meanwhile, production in Western Europe has, as I have just pointed out, recovered rapidly, much more rapidly than after the First World War. The material basis for this production trend has been not only outside financial aid of an extraordinary character, that has made available machinery and raw materials which otherwise would have been lacking, but also a general demand and supply situation in the world, corresponding to a sellers' market in most fields and, consequently, full employment. Full employment has been the declared goal of government policy in all countries. But we should not conceal from ourselves, that in the Western world this demand and supply situation, as always before, has mainly been the accidental historical outcome of the play of market forces. And, paradoxically enough, it is the prevailing international tension, the very fact that a peace-time economy has not yet been restored after the end of the shooting war as was generally expected, which has served as the precarious basis for the historically unprecedented prolongation of the post-war boom.

All governments have valid political reasons of their own for taking credit for the full employment which has so far, on the whole, reigned since the end of the war, and public information is in most countries much better controlled than earlier. The general public in the Western countries is, therefore, not well aware of the uncertain basis for the persistent post-war boom. The insecurity of the Western European economic situation was, however, exposed by the shivering effects in Europe of the mild and short American recession in the summer of 1949. The recession faded away that time. It didn't have its causes deeper than in the sphere of stock-holding and prices; investments remained fairly steady. But at least the economic experts must have read the handwriting on the wall.

The basic insecurity in the Western European situation is, of course, very much larger because of the trade and payments

disequilibrium briefly referred to earlier. If a major disturbance should occur, for instance in the form of a real American recession stretching over a year or two, there is at present no effective international machinery in existence to curb its effects in Europe. Already the presence of the risk of such an accident, which must loom large in the mind of every responsible economic statesman in Europe, is a constant and pressing reason for perfecting the national system of economic planning as, in the last instance, the only security to fall back on. If and when it happens, it will unfold as a violent shock, again forcibly pushing national economic planning in every individual country.

If, on the contrary, the post-war boom should again receive a new lease of life through a serious worsening of the international political situation and a consequent further conversion of production to increased military preparedness, the risk would instead be a new inflationary development. England and the Scandinavian countries, who used the occasion of the American recession last year for being driven to take a large dose of currency devaluation to protect their national booms, would then be in a particularly exposed position. One thing is certain, namely that the need for State intervention and national economic planning in such an emergency would not be less than in the alternative situation of a depression.

IX

Let me at this point refer to the monetary system as an illustration of how, in the instigation of national economic planning, causes from inside and from outside merge their effects, and how the broad trend of changed attitude co-operates with the shocks from a crises-ridden world.

The old gold standard which, even if it was never universal and never functioned so perfectly as in the textbooks, nevertheless for a considerable period secured a measure of international stability for the main trading regions, rested in the last instance on certain given and known, unreflected and unchallenged patterns of thought and behaviour in the international banking

community, and, further, on certain respected taboos on the side of the politicians. Thanks to some "gold superstitiousness" —which the better versed could always justify to their intellectual conscience by its wholesome effects—monetary policy was in principle no policy at all and was in any case kept out of politics.

To recurring changes the central banks reacted according to a prescribed set of rules. A tendency to a change in the balance of payments of a country—for instance due to a crop failure or to the undertaking of a big investment scheme—was followed by certain movements in the capital market and eventually by some changes in the gold holdings. To this the central banks answered by certain adjustment in credit conditions, which, according to another set of rules, were reflected in the behaviour of the private banks. In many ways, this all had in its turn certain effects on the business situation, on the volumes of stocks, on production, prices and, perhaps, employment, which all reacted back on imports, exports and foreign lending and borrowing. It was accepted that nothing very much could be done about it ; things would have to take their natural course. The whole system was rocking beautifully between certain extreme limits, of which two were the so-called upper and lower gold points which determined the rates of exchange where it became profitable for gold to move from one bank vault to another. Short-term credit flowed, activated by the prospect of tiny speculative gains, as water between connected vessels, making it easier for equilibrium to be maintained without too violent, non-synchronised reactions within the individual countries. The whole system depended upon the belief in its automatic and certain continuance.

All this is gone. The international pre-conditions for the functioning of such an automatic monetary system do not exist any more. Even if we should assume that an approach could be made to some sort of long-range trade equilibrium, it would have to be reached by rigid national controls in many countries. There will be no capital market in the old sense to cushion the effects of short-term variations. I do not entirely exclude the possibility of an *organised* international system,

functioning to fill this rôle. But it would not be the old automatic system under the gold standard. Rather it would represent a sort of international or, better, supra-national economic planning in the monetary field. And we might just note in passing that the International Monetary Fund which was set up for this purpose has, in all essentials, not even started to function.

But the downfall of the gold standard is not solely due to international causes, *i.e.* to the international disequilibrium in trade and payments and the lack of forces acting to restore equilibrium. The national pre-conditions for a proper functioning of the old monetary system are also absent. No country is prepared to accept any longer to have its level of economic activity and of employment determined by the automatic repercussions, through the banking system, of changes in its international payment situation. To put it in another way, no country to-day is prepared to allow monetary policy to remain outside economic policy or even politics.

And everybody now knows how it can be influenced. A fundamental social taboo is broken, and once broken it cannot be re-erected again. It was in his nostalgic thoughts about the gold standard that the late Gustav Cassel, my old friend and teacher, once quoted *Genesis* somewhat freely : "When man has eaten of the tree of knowledge of good and evil, he will never again be so innocent."

To be more explicit, I want to refer to one particular factor in the monetary system : the rate of interest. This "price of money" and "price of capital disposal" was not only an important variable in the semi-automatic mechanism of the international monetary system, but was by Wicksell given a key-rôle in preserving the balance between aggregate demand and supply. This regulator is now in practically all countries thrown out of gear. It has become a typically political price, and the tendency is to peg it at a low level. The reasons for this are several :

(1) The huge public debts make it a fiscal interest of every State to keep down the debt service, at the same time as, for the same reason, it becomes a general stability

interest not to have the value of the tremendous volume of State bonds fluctuating too much.

(2) The buyers of credit—farmers and industrialists—are much more important pressure groups than the unorganised suppliers—the capitalists and the savers—once the rate of interest has become a political price.

(3) The State is increasingly taking over responsibility for housing and is everywhere attempting to keep down rents. The rate of interest controls the most important cost item in rents.

(4) There is in democratic nations a general and growing political bias against "unearned incomes."

This is all very simple. The problem is rather : how is it possible to keep a balance between saving and investment with these pegged and low interest rates ? The answer is, first, that this balance is not always kept. A tendency to run into inflation is, as I will presently return to, a rather normal trait of economic planning in the present historical stage. Second, the high and steadily rising level of taxation is very generally assumed to be a deterrent to investment. This is not true of all taxation. Some taxation is actually, on the contrary, an incentive to investment, and not always in a very rational direction. But let us assume that, on balance, taxation is really keeping down investment. It is not equally generally observed that with present low levels of interest rates such a deterrent is required in the interest of internal equilibrium. From this viewpoint the high taxation implies a substitution of taxation for interest ; part of the gross interest is expropriated by the State in the form of taxation.[1] And, as I said, taxation is apparently often not high enough and, anyhow, not deterrent enough, to present an inflationary trend, or to make unnecessary direct investment controls in order to suppress the inflationary pressure.

[1]See Myrdal, "Höga skatter och låga röutor," *Studier in ekonomi och historia tillognade*. Eli F. Hechscher, Stockholm, 1944.

X

The reason why in this paper I have found it interesting and important to stress the deeper changes of peoples' attitudes as a causal factor underlying the development towards state economic planning, is that these psychological changes, related to the whole development of modern Western society, are clearly non-reversible. It is true that these changes of attitudes have been very forcibly enhanced by violent institutional changes, brought about by crises, which all the time have tended to break up established norms and to release the inhibitions of the *status quo*. As less and less is taking care of itself automatically, peoples' appetite for more and more conscious controls has increased. This is a typical "cumulative causation," and there is obviously no way back. We cannot make people less "sophisticated." Who should do it? And by what means should it be accomplished? In our democracy rationalistic education is the general method to induce gradual change in attitudes. Should we attempt to de-educate people?

The institutional changes themselves follow a pattern of cumulative causation, with the international and internal causes in interplay. On the one hand, the tremendous shocks from outside, the international disequilibria and insecurities, have continuously been putting the individual States under the necessity of ever more State interventions and economic planning. On the other hand, there is no doubt that national economic planning, necessitated or given a spur by international disturbances, in its turn continuously works as an important obstacle to restoring international equilibrium in trade and payments by automatic adjustments within the price mechanism. The essence of national economic planning is very much a resistance on the part of the individual States to accepting these adjustments. And as I will presently mention, there are, in addition, specific reasons why national economic planning operates with an autarchic bias.

We have thus, in the international field, an exact parallel to the initial phenomenon within a country which I characterised as a tendency to an overall disorganisation as a result of the

organisation of the individual markets—until they were centrally controlled by a nationally planned economy. Indeed, this disorganisation was pointed to as one of the main forces driving the State to central planning. In the international field the difference is that we do not have a world government which can step in and control the States, as the State is increasingly controlling the private interest organisations.

We can dream about the supra-national planned economy which is needed. Any economist who knows his craft can sketch in some detail how, in theory, it should operate. It would be a very difficult undertaking in actual practice, however, even if there was a world State in existence. National planning labours with many difficulties and they would mount in a supra-national planning. But all such speculations are idle. We do not have a world State and we are not going to have one. The substitute we have for supra-national planning through a political world authority is international negotiation between sovereign national States.

Quite a number of international organisations have been created for the purpose of organising, in different fields, those negotiations in the direction towards approaching, if not supra-national planning, in any case a reasonable degree of international co-ordination of national planning. They are both world-wide and regional. It is not possible for me here to go into an analysis of these attempts. I am afraid that the results of such an analysis would be the conclusion that none of them have even started to function as really important agencies of international economic co-ordination. This is true of the International Monetary Fund, of the International Bank, of ITO, of FAO, of OEEC, and of ECE. Partly, this is due to technical faults in their constitution and general set-up There is thus, for instance, at the basis of both the Fund and the ITO an irrational confusion of, on the one hand, the long-range problem of how to maintain a balanced situation if and when it is once reached, and, on the other hand, the short-term problem of how to approach it. But much more basically the difficulty is political. Even apart from the East—West tension, governments are not yet prepared to give up even

minor portions of their national sovereignty and their short-range national interests.

This fact should, in my view, not be a reason to give up these efforts. Reforming the entire world is a task which should be timed in terms of generations and not months and years. But a sober recognition of the difficulties should determine our strategy. For my part I am convinced that efforts towards a real co-ordination of national plans, even if only between smaller groups of Western countries, are over-stretching the present political possibilities and can only lead to disillusionment. As I see it, the situation is not ripe even for a rational regional co-ordination of investment plans in specific industries.

On the other hand, I see considerable possibilities in long-range trade agreements, assuring export and import markets to be calculated with certainty in the national investment plans. If they are framed to serve only as a basis for trade which is permitted to go above and outisde the basis agreements, they have the potentiality of enlarging the scope of commercial relations. I also believe in the possibility of developing regional and world-wide commodity arrangements in the field of basic raw materials. Above all, I believe that impartial, courageous analysis and discussion of facts and trends can, in many cases, be a wholesome check on the irrationality of both industrial management and national governmental schemes and also pave the way for long-range agreements between the countries.

XI

National economic planning labours in our Western democracies under many difficulties and shows, in the present stage of its development, certain systematic defects which I now, though it is somewhat outside the problem chosen for this paper, want briefly to comment upon. These main shortcomings have all a major part of their origin in the fact that, like most other things in our public life, economic planning came into being more or less haphazardly. As I have already pointed out, economic planning as a political phenomenon was

itself never planned or designed. It just grew as the cumulative result of a great number of *ad hoc* reactions to emerging events, these reactions in their turn gradually unleashing and being themselves conditioned by a secular change in peoples' attitudes to society. Even to-day, when it is commonly recognised that central State economic planning is necessary, many important parts of State interventions are still very badly co-ordinated. The planned economy is only gradually taking its shape as a response to the need for rationalising State intervention.

One main defect in our national planning is a very apparent tendency to lapse into an inflationary development. I have already referred to the reasons why interest rates tend to become pegged at a low level. The more general cause of the inherent tendency to inflation in our planned economies is their democratic foundation. Where prices and wages are not pure market phenomena any longer but are being regulated, this means with us that we all, through our representatives, determine our own and each other's incomes by collective bargaining. It is natural if, in this political process, when we are trying to keep our own remuneration as high as possible, we are tempted to agree to a compromise allowing also other peoples' incomes to go up. The former Minister of Finance in Sweden, Mr. Ernst Wigforss, once remarked in a debate in our Riksdag that if workers and farmers, who are the great majority in our nation and who have all the power, decide that they want higher incomes, nobody can prevent them from getting it.

If this tendency gets under way, two things can happen. Either the inflation is allowed to take its natural course to the final great disadvantage of the workers and generally the lower income groups, as has happened many times before in many countries and now, after the war, in several countries including France and Italy. The result is inevitably a most undesirable redistribution of real incomes and wealth, dangerous for the stability of the political structure of society. When an internal monetary equilibrium is then, more or less temporarily, restored and maintained, it is founded partly upon this unfortunate and politically dangerous basis of depressed real incomes for the

salaried classes and the recipients of pensions and other fixed money incomes.

In a somewhat more advanced stage of economic planning, the inflation is kept "suppressed", as has notably happened in England and Scandinavia. But that also is, in several respects, a bad solution. Internationally, it tends to widen the disequilibrium in international trade and payments relations and thus increases the scope of the interferences in trade and payments necessary to counteract it. Nationally, suppressed inflation protects the lower income groups, it is true. But it necessitates a large number of State interventions which have as their sole motivation the need to counteract the too large aggregate nominal incomes: rationing, building controls, allocations, price controls, and so on. This spreading out of State controls into detailed "regimentation" results in all sorts of uneconomic dislocations, hampering production. The political and economic brains of the country, which should have been engaged in the important tasks of economic planning, become occupied by all this petty tampering. This prevents the planning efforts from becoming successfully engaged on the major problems of rationalising production and consumption. The irritation created by the countless interferences in private life actually discredits economic planning, as the adversaries of planning will preach to people that this is what planning consists of. An opinion can actually, from time to time, be created for reverting to a freer economy. As this, however, cannot change the broad trends and decrease the necessity of State interventions, it will only succeed in keeping them, for a time, on a lower level of co-ordination and efficiency and, perhaps, even risk the degree of stability reached by the suppression of the effects of the inflationary pressure.

The first condition for a really successful economic planning is, therefore, that internal balance be kept between aggregate demand and supply. By this I mean preserving a situation where an inflationary spiral is avoided without necessitating such controls as have no other purpose and which no major group of citizens would like to preserve for their own sake (as, for instance, restrictions on the construction of homes, schools,

and hospitals). It is detrimental to national planning if it places itself in such a position towards the working of the price mechanism internally in the country that it peters out into a guerilla war against the price consequences of an inflationary pressure which it has not had the will or the strength to prevent. It is true that the price mechanism cannot, by itself, be relied upon to realise automatically the political aims of organised society. It is, indeed, the recognised purpose of national planning and State controls to steer and rectify the blind working of the price mechanism. But if the planning is focussed upon the major goals and the controls are rationally applied to effect the desired general conditioning of the operation of the price mechanism, this mechanism can be transferred into a most obedient and efficient instrument for economic planning, and a maximum of freedom to move within the general conditioning of State controls can be allowed the individuals in society. This is possible on condition that an internal monetary balance is maintained.

Economic planning is under all circumstances a most difficult undertaking and should not be overstrained. This opinion that economic planning should carefully preserve a maximum rôle for the working of the forces in the market in reaching its goals, is not a conservative political bias on my part. I am just trying to be rational, and my conclusions are rather of particular importance for the radical planner who does not wish to see the planning efforts wasted on a rearguard fight against inflation but who wants to accomplish important results within a fairly short time by rationalising and maximising production and equalising consumption. The one thing which, more than anything else, in post-war years, has inhibited and partly defeated rational economic planning in Britain and the Scandinavian countries, is, in my opinion, the inability to prevent inflationary pressure.

Precaution number one for economic planning is, therefore, to retain internal monetary balance. This is very easy to prescribe but, for reasons already given, most difficult to attain in a democracy, where prices and wages have become political prices. I know of no other cure than adult education, the slow

process of getting people in all social classes to grasp the truth that raising nominal incomes faster than productivity is not only totally useless but actually very damaging. A main advantage to be gradually realised in our society by "industrial democracy," allowing the employees increasingly to participate in industrial management, is precisely this knowledge and this responsibility.

A second main defect in our planned economy is the gradual disappearance of incentives to risk-taking and exertion. Here again the basic cause must be said to be our democracy itself. Justice and equality are the main values protected in our State interventions. As a matter of fact, it is in the Eastern countries, with their totally nationalised economies, where to-day the old-fashioned capitalistic incentives to work hard and well are best preserved, while in our Western countries they are gradually sacrificed for security, justice, and equality. I know of no other cure for this systematic fault in our Western economic planning than, first, to build up, through education, other and more social incentives as fast as we can and, second, to attempt to reverse the tendency by consciously inserting into our society again some new set of financial incentives.

A third main defect has already been referred to, in general terms, namely the tendency of our economic planning to become autarchic. All our countries have committed themselves to full employment. It was found out during the 'thirties that, to some extent, it was possible to alleviate a depression by restricting imports and, further, that internal expansion during an international deflationary development required import restrictions as protection. Everybody knows that internationally these national policies counteract each other and, on balance, tend to spread and deepen a depression. But, in a world-wide deflationary development, restricting imports from abroad will stand out as a financial necessity to any individual country which has to try to keep up employment at home.

If the planned economy in a country instead develops in an inflationary direction, which for reasons already given will be a more ordinary course, again this country will have to restrict

its imports even if there is no general trend towards deflation abroad. The too large incomes will tend to increase the demand for import goods and decrease the supply of export goods. This is a fact which economists overlooked until very recently, that in a system of planned economies both national inflation and international deflation tend to make import restrictions necessary.

There are still more fundamental reasons why nationally planned economies in the Western countries can be expected to move in an autarchic direction. One reason is irrational but nevertheless very powerful. People are normally protectionists. In all countries there is a bias in favour of home produce and an aversion against foreign competition. Almost everybody is anyhow for protection of his own trade. By log-rolling, support is rather easily won for a protectionistic general front, particularly as the consumers as a pressure group are always relatively weak. This is normally so, and this is one of the stock arguments of the free-traders. But it may be feared that when a system relying more on automatism is gradually changed into a planned economy, founded upon a democratic basis, more scope will be given to the protection seekers.

There is also a rational, or semi-rational reason why a planned economy can be expected to follow an autarchic line. It is possible to plan home consumption and internal demand with some degree of certainty, including the substitution of home produce for imported goods. Export is so much more difficult to calculate and investment for the production of export goods carries greater risk. It is very natural, indeed, if, with the stress now given to full employment, the planner prefers security, particularly as the world is now developing.

To propagate "free trade" as a cure for this last main defect of national planning is not very practical in view of the facts as they present themselves to every single country. For my part I have no other prescription, than that we should work on diligently in the international organisations and try, by incisive and impartial studies, to impress upon the governments not to be more nationally selfish, more internationally inconsiderate

in their planning, more autarchic, than strictly necessary. The advantages of an international division of labour are so great that they warrant the taking of considerable risks.

XII

Popular controversy in our countries still turns around the old doctrinal question whether or not we should have a planned economy. In the light of the preceding discussion this is pretty much nonsense. There exists no alternative to economic planning. There is, therefore, no case to be made for or against economic planning, for or against free enterprise or free trade. Ever more State intervention and economic planning is part of the historical trends. These trends have deep causes which can be analysed as has been attempted above. In reality, it was never, and is certainly not now, a choice. It is a destiny. We will have to do the best with the world we have. We must do better and better even with our economic planning.

Having been so candid about the shortcomings of economic planning in its present historical stage in our democratic countries, I may at last be allowed to hint at the reasons why I personally do not share in the often expressed pessimistic view that economic planning endangers democracy. All this popular talk about economic planning leading us straight to the Police State, and so on, is, if you permit me to be blunt, just bunk.

Historically, we have, as far as I know, never seen a democracy failing because of too much economic planning, or even too much State interference. The view I am criticising has thus no other foundation than empty speculation.

Democracy in our countries is made of much tougher material. It has behind it many centuries of unbroken growth. Long before we had a system of universal suffrage we had a rule of law, with regulated instead of arbitrary relations between individuals and between individuals and the State.

The nations which now and earlier for internal reasons have succumbed to totalitarianism, have all had a much shorter history as legalistic democracies. Even the discussion of the

"crisis of democracy" which has been going on uninterruptedly since long before the First World War, has referred to nations with their revolutions much nearer behind them. And economic planning was never in this discussion a crucial issue, until very recently.

Such a view is apt to give reasons for great scepticism toward the enthusiastic endeavours to erect rapidly, by constitutional fiat, democracies on virgin soil—in Latin America, in Eastern Europe, the Middle-East, the Far-East, and Africa. But it should make us rather calm in regard to the security of our own democracy. Common people in our countries have never become very excited in spite of all there has been to read in the newspapers about the dangers for our democracy of economic planning. They feel, and I believe rightly, that our democracy could be crushed by foreign domination but hardly by forces from within. Our democracy can even stand economic crises of the most violent character. Certainly it can stand more economic planning.

I want here to emphasise that the basic changes of attitudes, which I referred to in the beginning of this paper, do not work towards giving up democracy. They have rather the very opposite direction of implying an ever wider participation in responsibility for society. All these interest organisations, which are at the bottom of our type of economic planning, become agencies for the collective expressions of the individuals' desire to take part in the moulding of their own economic destinies. I have stressed that in our society the trend is increasingly to give emphasis in the constitutions and operations of these organisations to the democratic values of publicity and member participation. The present trends in our societies are, in my opinion, clearly to strengthen rather than to weaken democratic participation, to give democracy deeper roots and wider scope.

It is true that the political problems tend gradually to become more and more complicated. But these more complicated problems of politics to-day come increasingly to concern the individual's own welfare, and this is realised by everybody. There is a parallel development of an ever more intensive

public discussion of the economic issues. In the last instance the individuals have undoubtedly to base their choice of political allegiance upon broad attitudes and upon their confidence in political parties and groups of political personalities. But so it has always been. You have on this island just had an election, and you have had it at a time when the decisions to be taken were more confusingly complicated than perhaps ever in your history. Quite apart from how we, from our individual viewpoints, evaluate the results, I believe there can be no question about it that the election shows that the democratic process in England functions with greater freedom and higher vitality than ever—in spite of the fact, and I would say partly thanks to the fact, that the State is now in charge of a very greatly increased responsibility for economic life. We have had the same experience in Scandinavia.

GUNNAR MYRDAL.

Geneva,
March, 1950.

The Advent of Academic Economics in England

I.

From the fifteenth to the eighteenth century the characteristic economic theory in England was provided by the merchant class ; Mun and Child had superseded whatever contribution the schoolmen of the universities might have made through the adumbration of canon law. Their victory had meant the eclipse of the Church and its branch, the universities, as arbiters in economic matters. That claim was not to be renewed until the nineteenth century was well embarked. Though Petty, with his connections with the Dutch universities, Oxford, and the new Royal Society, seems to have merged the academic with the pragmatic, the universities in England took little interest in political arithmetic. Trinity College, Dublin, had by the end of the eighteenth century produced through its Provost, Fellows, and alumni, a number of economic studies arising from the condition of Ireland, but these were factual or prescriptive.[1]

But by the late eighteenth century, Adam Smith, inspired by Hutcheson and Hume, had fully snatched back the initiative from the merchants. Dugald Stewart at Edinburgh, friend and disciple of Smith, followed his lead in teaching the new political economy, not only to native Scots, but to the wave of young Englishmen who went north in lieu of the grand tour, made impossible by the renewal of war with France. On the England of the new century Stewart discharged a group of his pupils, led by Francis Horner and Henry Brougham, who had imbibed political economy along with their moral philosophy and other staples of Scottish academic diet. But there was no unseemly rush on the part of the English universities, still profound in their lethargy, to rival the new light from the north.

[1]R. D. Collison Black, *Economic Studies at Trinity College, Dublin, Hermathena*, No. LXX, 1947, p. 65.

To be sure, there had been some donnish dabbling in economic matters at Oxford and Cambridge. As long ago as 1756, William Bell of Cambridge had submitted for one of Lord Townshend's prizes a dissertation on population and trade which succeeded in provoking controversy on the "causes of populosity" and in clearly enunciating the principle of the territorial division of labour.[1] But Bell was soon to busy himself with the proofs of Holy Writ to the exclusion of economic speculation.

The expedients of Pitt's war finance had attracted the attention of two Oxford men—Dr. Tatham, the almost legendary Rector of Lincoln, and Henry Beeke, who as Professor of Modern History from 1801 to 1813 delivered his terminal lecture in Oriel College Hall.[2] Dr. Tatham entertained it as his own sober opinion that to him, and him alone, was owing the overthrow of Bonaparte, and the consequent glory of Great Britain. The Bank, he said, refused Pitt advances, and the war must have dropped, had not a pamphlet of his own, advocating the establishment of a rival bank, frightened the Old Lady of Threadneedle Street into a loan. Nor was this the end of Dr. Tatham's contribution to the financing of the war—he also laid claim to the invention of the property tax. He became a virulent opponent of the Bullion Committee, condemning with characteristic vigour the deflationary policies it proposed.[3] Henry Beeke too had a claim, preferred by some, to the invention of the income tax.[4] He certainly investigated its working, and attempted a calculation of the national income to this end.[5] Somewhat later he was approached by the egregious Vansillart, Chancellor of the Exchequer, for advice. At Cambridge, in part contemporary with Tatham and Beeke, there was Dr. John Symonds, Professor of Modern History 1771-1807. He had spent four or five years studying at first hand agricultural

[1] *What Causes principally contribute to render a Nation Populous, and What Effect has the Populousness of a Nation on its Trade.* Cambridge, 1756.

[2] G. V. Cox, *Recollections of Oxford.* London, 1868, p. 142.

[3] J. R. Green, *Oxford Studies.* London, 1901, p. 186.

[4] D.N.B.

[5] *Observations on the Produce of the Income Tax.* London, 1799.

conditions in Italy in the light of the policies of the several Italian States. He had concerned himself too with the problems of colonisation, and had contributed numerous articles to Arthur Young's Annals of Agriculture.[1]

Academic pronouncements on economic subjects were not without their dangers in the England that confronted Napoleon. The currency was a particularly treacherous subject. Edward Copleston, presiding as Provost over the lively Common Room of Oriel from 1814 to 1827 was a public disputant on the subject, who applauded Ricardo's abilities and the case for resuming convertibility in 1819[2]. Copleston was even thought by some to have inspired the work of Thomas Tooke.[3] But in taking the side hostile to the government's policy of the hour, he prejudiced his prospects to such an extent that when preferment finally came it was to the See of Llandaff, one of the poorest and farthest advanced in decay in the Kingdom.[4]

But the signs that the English Universities were slowly preparing to take a more active interest were gradually beginning to multiply. Sir Edward West, another Oxonian, presented his theory of rent to the world in 1815 under the pseudonym: "A Fellow of University College."[5] At Cambridge, Smithson Tennant, Professor of Chemistry, a visitor to Ricardo's house, was "very well read in political economy,"[6] William Whewell, though not yet Master of Trinity, had by the twenties embraced the subject in the great span of his studies, at one time engaging in discussion "day by day" on Malthus and Ricardo.[7] On the teaching side the

[1] K. T. B. Butler, *A "Petty" Professor of Modern History: William Smyth* (1765-1849). *The Cambridge Historical Journal*, Vol. IX, No. 2, 1948, p. 220.

[2] A Letter to the Right Hon. Robert Peel . . . on the pernicious effects of a variable standard of value.

[3] W. J. Copleston, *Memoir of Edward Copleston* . . . London, 1851, p. 152.

[4] Richard Whately, *Remains of the late Edward Copleston*. London, 1854, p. 28.

[5] *Essay on the Application of Capital to Land.*

[6] *Autobiographical Recollections of George Pryme, Esq., M.A.* London, 1870, p. 115. *Letters of David Ricardo to Thomas Robert Malthus.* ed. J. Bonar, Oxford, 1887, p. 182.

[7] I. Todhunter, *William Whewell, D.D.* London, 1876. Vol. II, p. 346.

study was gradually filtering in. William Smyth, appointed Professor of Modern History at Cambridge in 1807, another partaker of Ricardo's hospitality,[1] did his best not only to revive the subject for which he was nominally responsible, but also to convey to his hearers the importance of the "somewhat repulsive study of Political Economy." [2] George Pryme, partly inspired by Smyth's example, began, though largely on sufferance, a full course of lectures at Cambridge in 1816.[3] Smyth, consistent with his own precept, attended them. At Oxford we hear of Smyth's opposite number, Professor Nares, advertising in 1817 that he will read "during the present term, two courses of lectures, one on History and the other on Political Economy." [4] The conscientious but ineffectual Nares struggled with Smithian indeterminism to a class whose interest in the "curious science" [5] proved difficult to maintain. At Oriel many of the Fellows, including Richard Whately and Thomas Arnold [6] shared their Provost's interest in the subject.

The 'Twenties saw the formal, though still qualified, acceptance of Political Economy by the English Universities. At Oxford, in 1825, the Drummond Chair of Political Economy was founded, with Nassau Senior as the first holder. The University wrote politely to the founder, Henry Drummond, that it anticipated "the happiest effects" from the new Chair.[7] By 1828, Cambridge was prepared to afford Pryme, who by then had lectured for twelve years, an improved status. The courtesy title of Professor was then awarded, though "no duties were annexed to the Professorship," [8] and he was left as best he might to compete for the slender free time of the teaching programme with the Professor of Modern History and Modern Languages and many others, bound, like them, by the under-

[1] *Letters of Ricardo to Malthus.* p. 82.
[2] K. T. B. Butler. *ibid.* p. 220.
[3] *Autobiographical Recollections.* p. 120.
[4] *New Monthly Magazine.* Feb., 1817. p. 46.
[5] C. Mallet, *A History of the University of Oxford.* London, 1927, Vol. III, p. 216.
[6] A. D. Stanley, *Life and Correspondence of Thomas Arnold.* London, 1852, p. 153n.
[7] Mallet. *ibid.* Vol. III., p. 215.
[8] *Cambridge University Commission Report.* 1852, p. 135.

standing that his lectures were not to interfere with "the proper studies of the place." [1] University College, London, as might be expected in an institution with which men like James Mill and Henry Brougham were associated, was soon after its founding in 1826 provided with a Professor of Political Economy. J. R. M'Culloch, as first Professor, began his stormy association with the College. He had failed in 1825 to secure the partition of Dugald Stewart's Chair of Moral Philosophy and Political Economy at Edinburgh, with a view to occupying the latter half himself.[2] King's College, London, followed suit in founding a Chair a few years later, to which Richard Jones, helped by the good offices of Whewell,[3] was appointed in 1833. The Whately Chair at Trinity College, Dublin came in 1832, shortly after Whately's accession to the Archbishopric of Dublin.[4]

So much for chronology. But what were the influences at work which made it possible for political economy to gain this status within the English universities, and which were within some sixty years to make of them the Sinai of the science?

Since the revival of the English universities that began somewhere around Malthus' undergraduate days towards the end of the eighteenth century, the feeling was growing among the creative minority that they owed a general duty to the truth and a persistent enmity to error, not merely in matters of esoteric concern like classical exegesis or dogmatic theology, but also with respect to ideas more directly affecting society,[5] But to meet this reviving sense of obligation two things were necessary. Intellectual discipline in the known fields of study had to be restored, in order that the modes of thought them-

[1]Butler. *ibid.* p. 229.

[2]Mrs. Gordon, *Christopher North, a memoir of John Wilson.* 1879, p. 197.

[3]Todhunter. *ibid.* Vol. II, p. 148.

[4]It was not however until the reforms of the 'Fifties and 'Seventies that the subject played any real part in university examinations, and even then it remained slight. For this reason the attendance at lectures was notoriously slender, and a frequent source of rueful comment by the professors. This was so right through the days of Pryme, Fawcett, Jevons and Cairnes to Marshall's time.

[5]External criticism helped the movement forward. *Edinburgh Review*, October, 1809, p. 40 *et seq.*

selves might be rehabilitated. Beyond this lay the problem of reasoning about society. Philosophy, classics and history had been the traditional guides to social policy, insofar as intuitive judgment had sought criteria beyond itself. But these studies had afforded guidance, if at all, largely in the form of precedent, precept, or disquisition on the ideal form of government. The new natural sciences seemed to offer a new prospect of precise and relevant reasoning. The France of the Enlightenment had caught the vision : the great French thinkers of the eighteenth century had no doubts of the potential value of the abstract method in the study of social phenomena. Montesquieu had argued that a science of society was possible ;[1] Condorcet had repeatedly appealed to scholars in his oration of 1783 "to introduce into the moral sciences the philosophy and the method of the natural sciences." [2]

But the rehabilitation of English university studies was no easy task. Logic at Cambridge, its statutory teaching long defunct, and represented by "a muddy scantling of metaphysic psychology and dialectic," [3] did not recover until well into the century. Mathematics too had fallen on such evil days that when Whewell took his B.A. degree in 1816 the standard of performance was far below that of the continent.[4] But the tradition of Newton was not yet dead. Men like Herschel, Peacock and Babbage repaired the breach in relatively few years. Natural science too was fast reviving under the impetus of Clarke, Malthus' one-time travelling companion, and others. By 1831 Whewell was able to defend Cambridge science to good effect.[5]

The revival in Cambridge of mathematics and natural science was bound to provoke the inquiry in active Cambridge minds, as it had already done at the *Ecole Polytechnique* and

[1]G. de Santillana, *Positivism and the Technocratic Ideal. In Studies and Essays in Homage to George Sarton.* New York, 1944, p. 249.
[2]F. A. v. Hayek, *The Counter-Revolution of Science. Economica,* February, 1941, p. 12.
[3]Sir W. Hamilton, *Discussions on Philosophy, Literature, Education and University Reform.* London, 1852, p. 120.
[4]Mrs. Stair Douglas, *The Life and Selections from the Correspondence of William Whewell, D.D.* London, 1881, p. 401.
[5]*British Critic.* January, 1831, pp. 71-90.

the *Ecole Normale*, should the application of such methods stop short of the study of society itself? There was general agreement that the attempt should be made, though opinion differed of course as to the choice of method and the finality of the conclusions that might be possible. Malthus, ninth Wrangler in his day, was conscious that the mathematical tool-box had applications to economic and social problems,[1] and the great bulk of his writing on population is testimony to his confidence in observation. Richard Jones, Whewell's intimate friend, undertook to apply the methods he had learned at Cambridge to political economy.[2] Perronet Thompson, sometime Fellow of Queen's College, Cambridge, pointed out that political economy "is only another branch of the philosophy of natural phenomena," and that if faulty conclusions relating to tides or telescopes were promulgated, "they (the Universities) would have opposed them by the dissemination of a counter-version of the truth."[3] But, he complained, they were slow in doing their duty in this way by political economy. John Herschel, late Fellow of St. Johns, and a leader of scientific thought, also argued for the application of science to the new field. "Political economy," he wrote, "is found to have sound principles," and " . . . great and noble ends are to be achieved . . . by bringing into exercise a sufficient quantity of sober thought, and by a proper adaptation of means."[4] Whewell himself, greatly concerned, "to procure academic recognition for more modern branches of science and philosophy," was well aware that the new political economy was a subject toward which Cambridge, the great repository of scientific method, owed a duty.[5] Not only so; all universities had the same obligation. Thus we find Adam Sedgwick, sharing with Whewell the leadership of

[1] James Bonar, *Malthus and his Work*. London, 1885, p. 225n.

[2] *Literary Remains of Richard Jones*, ed. Wm. Whewell, 1859, p. xx.

[3] *The True Theory of Rent in opposition to Mr. Ricardo and others* . . . 1826, p. 130. "What is of importance to promote," wrote Thompson, "is the direction of the same rigid processes to this science, that have been extended to the earlier and more forward branches of human knowledge."

[4] *Preliminary Discourse on the Study of Natural Philosophy*. London, 1830, p. 73.

[5] *Stair Douglas. ibid.*, p. 404.

Cambridge natural science, giving his benediction to economics as a fitting academic subject, rejoicing in 1833, perhaps a little prematurely, that "political economy has obtained an honourable seat in most of the academic establishments of the civilised world." [1] To the leaders of Cambridge thought it was clear that if the universities took no part in social thinking, the rule of men's minds would pass to such as had no scruple about claiming scientific sanction for untenable methods and conclusions. "As long as the accredited guardians of learning stand aloof from a branch of learning peculiarly adapted for the exercise of cultivated reason," wrote Thompson, "it necessarily falls into the hands of those who have less power to distinguish fallacies, and less caution to avoid them."[2]

Oxford studies, like those of Cambridge, had much ground to recover.[3] Oxford too had allowed logic to atrophy. Nor was there in the early years of the century any counterpart to Cambridge mathematics, as a form of intellectual discipline aiming at the development of the power of higher generalisation. But the First Examination Statute of 1801 began the remedy by prescribing the teaching of logic. Copleston, lately appointed tutor at Oriel, confronted with the new teaching responsibility, and "having received no instruction in it, and having no living help to apply to, collected and read all the books he could meet with that professed to treat of it." [4] Whately produced his once celebrated "Logic" to fill the gap ;[5] Political Economy was used to demonstrate the technique and problems of precise definition by the addition of Nassau Senior's Appendix of Definitions. But logic, though well embarked by the men of Oriel (their Common Room was said to "stink of logic")[6] found it heavy going against the Oxford addiction to patristic theology, out of which the hubbub of the tractarian controversy was to grow.

[1] *A Discourse on the Studies of the University.* Cambridge, Fourth Edition, 1835, p. 88.
[2] *True Theory of Rent.* p. 31.
[3] Cox. *ibid.* p. 37.
[4] R. Whately, *Remains of Edward Copleston, D.D.* London, 1854, p. 94.
[5] *Elements of Logic.* London, 1826.
[6] W. Tuckwell, *Reminiscences of Oxford.* London, 1900, p. 17.

By the early thirties Oriel, the centre of intellectual life in the University, contained the future leaders of the two factions, Tractarian and anti-Tractarian, whose debates were to pursue their tortuous way through the middle and latter part of the century. But as yet the mystics like Newman had little to say on the subject of political economy. Newman himself had helped Whately to write his logic.[1] The men of "common-sense" school, like Whately and Arnold who were later so strong in their antipathy to the Tractarians, were clear in their minds that the universities should concern themselves with the new discipline. Active minded men like Copleston, Whately and Thomas Arnold were aware that the political economy of the non-Christian Ricardians was fast seizing hold of their generation. But they were greatly struck by the growing significance of the new study in practical affairs. "For it seems to me," wrote Whately, "that before long political economists of some sort or other must govern the world." [2] Men of Whately's mind feared the secularising of political economy. "Now," he said in 1829, "the anti-Christians are striving hard to have this science to themselves."[3] It was not that he was afraid that political economy might become a science in conflict with Christianity or Scripture. Whately was convinced that Scripture would not be damaged by conclusions arrived at by starting from non-Scriptural premises. In this he followed Paley's dictum : "Whatever renders religion more rational, renders it more credible." [4] He was confident in the "argument from design"—his belief in the Divine Order was extended to the economic field. He warned against the *petitio principii* into which the Christian would fall who began by assuming the inspiration of the Bible and judging the fruits of the new science by it.[5] But he did

[1]Whately, *Logic*. p. viii.

[2]E. J. Whately, *Life and Correspondence of Archbishop Whately*. 1866. Vol. I, p. 66.

[3]*ibid.*, p. 67. Much the same view was taken by Thomas Chalmers who desired to "Christianise the science." J. W. Harper, *The Social Ideal and Dr. Chalmers*. Edinburgh, 1910, p. viii.

[4]W. Paley, D.D. *The Principles of Moral and Political Philosophy*. New ed., 1819, p. iv.

[5]*Introductory Lectures on Political Economy*. London, 1832, pp. 29, 31.

greatly fear the gaining of prestige by non-Christians by virtue of their monopoly of political economy :—" . . . if these efforts are not met, the rising generation will be at the mercy of these men in one way or another—as their disciples or as their inferiors."[1] Copleston, Whately and Arnold were Christian pragmatics ; for them 'revelation' was severely limited, certainly stopping far short of guidance in economic matters. Thus they conceived it to be the duty of the Christian to apply his rational faculties to the best advantage to this field, and the University to give all possible assistance.

But though in the early part of the century political economy had to find its way into Cambridge via the scientists like Whewell and into Oxford via the logicians like Copleston and Whately, there was a factor common to both universities—Modern History. We have seen how Beeke and Nares at Oxford and Symonds and Smyth at Cambridge had concerned themselves with the new study. The long war with France, with its vast problems of finance and logistics, concurrent with the new industrial inventions were making it abundantly clear that some recognition at least of the economic aspect of history was called for.

Of course there were from the outset grounds for resistance to the proposal that *de jure* recognition should be extended to the *de facto* infiltration. When Dr. Kaye, the Vice-Chancellor, carried George Pryme's proposal to the Heads of Colleges, he found that "some of them wished me to withhold my consent altogether." [2] The post-Waterloo universities were well-nigh Church corporations, and were to remain largely so until the century was three-quarters spent. Malthus had shocked many of his brothers of the cloth with his 'un-Godly' theory of population, and when they perceived that it constituted one of the pillars of the Ricardian system, many leading churchmen were bitter critics. It is significant that Whately and Senior at Oxford and Whewell and Jones at Cambridge were all opposed to Malthus on this score.

[1] *Life.* p. 67.
[2] *Autobiographical Recollections.* p. 121.

Then of course there was the theory of rent. A 'science' that could produce a theory of exploitation of this kind with its plain slight on a major source of college revenues could scarcely expect cordiality. The Heads of Colleges who could inform a Royal Commission as late as 1852 that College rent rolls were their own affair [1] could hardly be enamoured of Ricardianism. Moreover it was not merely the particular vulnerability of the universities to the rent theory that could create a hostile feeling : the Universities and the Church were bound in triple alliance with the landowners. Much opinion in the universities would have included the Ricardians among the malignants described by the Great Johnian, Wordsworth, who were charged with destroying the social fabric, who, "pretending to invigorate the tree, pour scalding water and corrosive compounds among its roots." [2] Peronett Thompson, conscious of this, did his best to amputate the offending concept from the Ricardian corpus.

Such considerations gave further point to the doubts about a subject of such direct significance for social policy. Sydney Smith remarked : "When a University has been doing useless things for a long time, it appears at first degrading to them to be useful. A set of lectures upon Political Economy would be discouraged in Oxford, possibly despised, probably not permitted." [3] So confirmed in his fears of too high a degree of relevance was George Pryme at Cambridge that a major point of pride with him lay in the inability of his students to guess where his sympathies lay, a somewhat curious attitude in one who sat for many years in Parliament and was a vigorous campaigner in the Whig interest.[4] This effect was attained not by assuming a high level of abstraction as is nowadays sometime the practice, but by considering the subject, as one

[1] *Oxford University Commission Report*, 1852, p. 125. Such Colleges as supplied information were overwhelmingly dependent on rents. The Drummond Chair of Political Economy at Oxford was itself a charge on the founder's rent roll. *Westminster Review*, July, 1827, p. 177.

[2] *Second Address to the Freeholders of Westmorland*, 1818. In *Prose Works of William Wordsworth*. Vol. I, p. 252.

[3] Mallet. *ibid*. Vol. III, p. 215.

[4] *Autobiographical Recollections*. p. 123.

student put it, "like Metaphysics, rather in a historical than a partisan light."[1] Even Whewell, noted in his day for directness, knew that caution was called for here. While seeking to persuade the Syndics of the Press belonging to the University of Cambridge to publish Richard Jones' Literary Remains, he confided to Herschel his opinion of the University authorities : "the ominous phrase 'Political Economy' may frighten them beyond all control." [2]

But the general opposition to political economy was less effective than might have been expected. In the years of the supremacy of the Noetics [3] at Oxford and the school of Whewell and Sedgwick at Cambridge, the leaders of both the natural sciences and of the humanities favoured the introduction of the new subject, even though it was on their own terms. Political Economy, an appellant for admission to the English Universities, was tried, in a somewhat absent-minded way, in the balances of contemporary opinion. Some weighed an idealised science, purged of all "non-neutral" elements, some a body of thought that was but the projection of their own philosophy or theology. Most found political economy wanting in greater or lesser degree, yet somehow, by the sum of qualified assents, it was able to insinuate itself.

II.

Two sets of issues dominated the early-nineteenth-century discussion of the functions and future of the English universities. There was the question of the internal organisation of the universities and colleges themselves, the disposition of their respective resources, and the terms of entry. But behind these practical problems, and prior to them in the minds of most disputants, were the claims of the various disciplines, old and new, for attention. At Cambridge, as became its scientific tradition, discussion of the credentials of the fields of study

[1] C. A. Bristed, *Five Years at an English University*. London, 1873, p. 349.

[2] Todhunter. Vol. II, p. 86.

[3] The Fellows of Oriel adopted this title in the first quarter of the century. It signified one "who exercised his highest faculties as opposed to those who let them lie dormant." Stanley, *Life of Arnold*. p. 117.

was relatively free from invocations of the Deity, concerning itself in the main with the kind of issues that would scarcely seem out of place in a modern discussion of the function of the universities. At Oxford in the 'Thirties, the suffocating debates over the Tractarian Movement dominated everything else, providing the principle of selection in such remote matters as the choice of a professor of poetry.

Political Economy, having gained entry to both universities before these debates were really under way, was not obliged to fight the battle of admission in an atmosphere charged with such heady issues. Nevertheless, it was bound to be brought under scrutiny. For on the pedagogical side there were already those like Whately and Senior who saw the value of the new study as a mental discipline and desired for it a larger teaching role. Further, it was becoming increasingly recognised as the beginning of an attempt at the construction of a science of society, and consequently as a sanction for social policies. With this dual character, Political Economy became an important, though subsidiary theme in the contemporary university debates. In these discussions the economists *per se* played but a small part. The status of political economy was a problem of general policy ; the most significant contributions to the discussion came from the leaders of university opinion.

It is possible to identify three leading views. There was the Oxford Noetic view, with Richard Whately, Drummond Professor of Political Economy, 1829-1831, and later Archbishop of Dublin, as its chief spokesman. Whately, the logician, the disciple of Paley, aware of the dangers of political economy, both as sanctioning policies and as colliding with some views of religion, was yet convinced that "we are bound to use our own natural faculties in the search after all truth." [1] There was the view of William Whewell, Master of Trinity College, Cambridge, equally believing that the attempt to construct a political economy must procede, but differing strongly with Whately and his followers both as to the nature of human motivation and the methods appropriate to the new study. Thirdly, there were the Tractarians, with Newman, Pusey and

[1] *Introductory Lectures*. p. 34.

Keble as spokesmen, who differed both with Whately and Whewell, accepting the study grudgingly if at all, maintaining that it, in common with all studies, must be held subservient to theology.

Richard Whately, friend and sometime tutor of Nassau Senior, was one of the founding fathers of the concept of a neutral science of political economy. He knew those who favoured its development in the University to be under jealous scrutiny from several sides. There were those who saw it as impugning the social arrangements of the day. To these Whately extended the assurance that the first half of the title of Political Economy was really a misnomer.[1] There were those who objected to a discipline that isolated out a single field of economic behaviour. With these Whately sought no compromise, expressing the wish "that the complaint against Political Economists of confining themselves to the consideration of wealth were better founded than it is."[2] Thus Whately's choice of the term 'Catallactics' to signify the science of exchanges, was more than a mere curio of nomenclature. It indicated the closely prescribed scope of the subject as Whately conceived it : the market was to supply the basis for political economy.

Then there were those who saw in political economy an illicit, godless science, likely to end in querying the goodness of creation. There were those whom Whately described as censuring political economy "as being connected with *human conduct*, and yet not professing to be *drawn from Scripture*," and who argued that "in the regulation of our conduct, the Bible is the only sure guide ; and a system which professes an independence of this guide in human affairs, is to be regarded as something unholy."[3] To such as these Whately offered the reassurance that the University of Oxford, by appointing himself Bampton Lecturer, and three times Select Preacher, had testified "the most complete dissent from the notion that the studies of Political Economy and of Theology are unfriendly to each other."[4]

[1] *Life of Whately*. p. 142.
[2] *Introductory Lectures*. p. 22.
[3] *ibid*. p. 35.
[4] *ibid*. p. viii.

There had been enough difficulty in reconciling religion and the new physical sciences; a science of society might prove even more intractable. But for Whately the working out of the economic process was a field in which the beneficence of the Creator could be demonstrated with great advantage. He wrote to Senior when he was proposed for the Drummond Chair: "I am thinking . . . of making a sort of continuation of Paley's *Natural Theology*, extending to the body politic some of his views as respecting the natural." [1] Whately would seek economic parallels to Paley's "numerous instances of evident design in the Universe." The bent of his mind is clear when he recommends in conjunction with Paley, *The Theory of Moral Sentiments*, and the *Wealth of Nations*.[2]

But subtle difficulties presented themselves to those who, like Whately, sought to construct mutually consistent chains of reasoning out of economic behaviour. Little progress could be made without entering upon some postulates about human motives. On this matter Whately's generation was strongly divided. There were two contending views on the nature of human conscience, the source of behaviour. The followers of Paley argued that conscience, the sense of right and wrong, were the creatures of experience. As Jevons put it: " . . . it appears that I am decidedly a "dependent moralist," not believing that we have any "moral sense" altogether separate and of a different kind from our animal feelings." [3] The 'independent moralists' maintained that the conscience enjoyed an independent existence, and was not a creature of circumstance. The Paley view of the dependence of conscience (which of course was much older than Paley) was a necessary basis for the utilitarian philosophy—one that argued that the guide to the morality of any act was not some inner light, but the balance of pleasure over pain in which it resulted, and that

[1] *Life*. p. 67. John Bird Sumner, Bishop of Chester and later Archbishop of Canterbury, had anticipated Whately in this in his *Treatise on the Records of Creation and the Moral Attributes of the Creator*. 1816.

[2] Richard Whately, *Miscellaneous Lectures and Reviews*. London, 1861, p. 112.

[3] *Letters and Journal of W. Stanley Jevons*. London, 1886, p. 79.

"conscience" itself was merely the application, often in a habitual way, of this rational calculation. Here too was the clue to man's behaviour as an exchanging animal, as later developed explicitly by Jevons and others. Whately, in this respect, was not an out-and-out follower of Paley. Man did possess a "Moral-faculty by which he is instinctively led to approve virtue and disapprove vice." [1] Yet little could be derived from the contemplation of this entity upon which reasoning about economic choice could be based. The alternative was to by-pass this metaphysical concept, and merely proceed on simplified assumptions of maximising economic gain. As Whewell put it, Whately founded his opinions on the belief that "principles of action are known by consciousness and do not require detailed observation." [2]

The relationship between Whately and the Ricardians was further apparent in his emphasis on the reasoning process rather than on fact gathering. Whately, the leader for a time of English logical thought, uttered warnings to his students in political economy against the "mistake of beginning by a crude collection of facts." [3] "I believe," he said, "it to be a prevailing fault of the present day, not indeed to seek too much for knowledge, but to trust to accumulation of facts as a *substitute* for accuracy in the logical processes." [4] The pitfalls of reasoning on the facts must be faced : "that which demands the principal share of our attention in Political Economy, strictly so called . . . must be the reasoning process :—the accurate and dexterous application of logical principles." [5]

Thus did Whately's theology and his logic hang together. The former sought evidence of harmony and design in creation : the latter was to provide the mode of proof. The provisioners of London demonstrate the marvel : They "combine unconsciously to employ the wisest means for effecting an object, the vastness of which it would bewilder them even to contemplate." [6] Natural Theology could not fail to return

[1] *Miscellaneous Lectures.* p. 95.
[2] Todhunter. Vol. II, p. 123. See *Whately's Logic,* 1826, p. 303.
[3] *Introductory Lectures.* p. 224.
[4] *ibid.* p. 237.
[5] *ibid.* p. 239.
[6] *ibid.* p. 96.

an optimistic verdict : "The apparent design of Providence evidently *is*, the advancement of mankind, not only as Individuals, but as Communities." [1]

At Cambridge the attitude to method was very different. As his biographer has said, Whewell in his celebrated *History of the Inductive Sciences*, and in his other writings "attaches supreme importance to *Induction* : he contrasts this not infrequently with *Deduction* to the manifest disparagement of the latter." [2] The technique of constructing a few definitions and axioms and reasoning therefrom outraged Whewell, particularly where social phenomena were concerned. So strong an advocate of reference to the facts was he that Herschel, who shared many of his views, was criticised for insufficient zeal in his *Preliminary Discourse on the Study of Natural Philsophy*.[3] Definitions and category building ought to be the last stage of inquiry, not the first. On this theme Whewell sent a paper to Malthus, who took it at first as an attack on his own *Definitions in Political Economy*. Malthus agreed that definition could be premature and over rigid, but mildly pointed out that "without some understanding as to the meaning of the words used the advances in knowledge would be very slow." [4] Richard Jones had made this discovery in his own thinking.

But Whewell and Malthus shared the same fear of Ricardo's method. As a scientist, Whewell knew how readily it could yield false conclusions, and as a keen observer he saw how powerful a position such a case could make for itself among those without the perception or training to detect its limitations or pitfalls. The definitions offered by political economists, with their specious air of detachment, were the beginning of deception. "The names about which they contend . . . are in fact . . . goodly spoil." "If rent and taxes, wages and capital, were things with regard to which we might assert our pro-

[1] *ibid.* p. 104.

[2] Todhunter. Vol. I, p. 107.

[3] *ibid.* p. 55. *Compare Whately, Logic*, p. 10 : "The more precise and definite our object, the more likely we are to attain some valuable result."

[4] *ibid.* p. 66.

positions without moving men's minds more than we do when we talk of *lunes*, or the *angle of a semicircle*, we should no doubt be left to make of them what definitions we chose. But the fact is far otherwise." [1]

Cambridge science of the day was hostile to the Ricardians on further grounds. Whewell and Sedgwick in a long crusade had led opinion against the followers of Paley and the felicific calculus. By the same token they were anti-Benthamites. As Sedgwick, with the full support of Whewell put it : "All systems of political philsophy based on the doctrine of utility, and deduced by *a priori* reasoning from assumed simple principles (without comprehending all the great elements of man's moral nature, and without, perhaps, even regarding his social condition) are either mischievous or impracticable . . . The utilitarian scheme starts on the contrary with an abrogation of the authority of conscience . . . virtue becomes a matter of calculation—a matter of profit or loss . . . and among the greatest blunders the economist has committed, has been a hasty spirit of generalisation (and what infant science has not suffered from the spirit ?) an affectation of deductive reasoning, and a rash attempt to usurp, before his time, the chair of the lawgiver." [2] The final aberration of utilitarianism, in Whewell's eyes, would be the attempt, which he foresaw, to apply mathematics to motives. "In dealing with the moral elements of our nature," he wrote, "the laws of space and number bestead us but little." [3]

Whewell and Sedgwick saw the political economy of the Ricardians as a new and dangerous head on the old hydra of utilitarianism. "Pray recollect," wrote Whewell to his friend, James Forbes, Professor of Natural Philosophy at Edinburgh, "that I profess only to trace the consequences of Ricardo's *Principles*—principles which I am sure are insufficient and

[1] *ibid.* p. 53.

[2] *A Discourse on the Studies of the University.* p. 86.

[3] Todhunter. *ibid.* Vol. I, p. 50. Whewell found Say guilty of thinking himself usefully employed in increasing the number of abstract terms in political economy referring to the moral and intellectual qualities of man : he was one of those who "confound the language of the nation with long-tailed words in *osity* and *ation*." *ibid.* Vol. II, p. 49.

believe to be entirely false." [1] Whewell knew that a M'Culloch in Cambridge would have to be numbered among his intellectual enemies, and when a later Ricardian in the person of Henry Fawcett sought the Cambridge Chair he opposed him strongly.[2]

Yet Whewell and those who thought with him were not, as we have seen, averse to political economy *per se*. Richard Jones provided the escape from the apparent dilemma with his Baconian injunction to "look and see." It was to him that Whewell, Sedgwick, Herschel, and other leading Cambridge scientists gave their blessing. Political economy was to serve a long, perhaps indefinite, apprenticeship to the facts. This meant, of course, that to the public their attitude appeared ambiguous, involving acceptance of political economy, but rejection of the leading school, at a time when the two appeared to the indiscriminating to be coterminous. So Whewell prodded and prodded at Jones to produce something which would prick the Ricardian balloon that was blocking the light of reason. "Jones' book," he wrote, "will I expect . . . *faire epoque* in the science when it does appear . . . but he is heinously dilatory." [3]

Cambridge scientists and mathematicians showed no signs of becoming ' social engineers ' of the type that became so influential in France about this time, following the lead of Saint-Simon. By 1830 the *Polytechnique* had produced for Saint-Simon, Comte, and Fourier, something like one hundred disciples.[4] Cambridge science was in fact a bulwark against the illegitimate extension of physical disciplines to society. This was so on the ground both of method and of conscience. The study of society was in its infancy, requiring protection against the "deductive savages" who, over-anxious for the fruit, "cut down the tree to get at it." [5] It was by such abuse of method, claimed Whewell, that the false doctrines of population and rent,[6] the belief in Say's Law, "of which the

[1] *ibid.* Vol. II, p. 122.
[2] Leslie Stephen, *Life of Henry Fawcett.* London, 1886, p. 119.
[3] Stair Douglas, *Life.* p. 137.
[4] Santillana. *ibid.* p. 249.
[5] Todhunter. Vol. II, p. 141.
[6] *ibid.* p. 94.

fallacy appears so very obvious,"[1] and the Free Trade doctrine,[2] as palpably unproven, had gained such strength. Whewell and Sedgwick stood against those, in England or in France, who would "make the first glimmerings of Political Economy a ground of legislation." [3] Not only so, for Cambridge science the guide to conduct was inviolate : freedom of thought and action were paramount. Elaborate social schematics resting on conformity were ruled out. It is curious that John Stuart Mill saw as the great danger of Whewell's view of independent conscience that it could be used to justify coercion. "By the aid of this theory," said Mill, "every inveterate belief and every intense feeling, of which the origin is not remembered, is enabled to dispense with the obligation of justifying itself by reason, and is erected into its own all-sufficient justification." [4] But it was because, in the view of Whewell and Sedgwick, conscience was an independent entity, that it could not be tampered with to remake society, or for that matter, to justify the *status quo*. Thus were method and conscience a double bar to the "esprit polytechnique" in Cambridge.

But Whewell thought Mill and his school in their turn tainted with such ideas. He had noted of Mill in 1843 that : "He is quite subjugated by one whom I think a very bad philosopher, Comte . . . " [5] French positivism and English utilitarianism were, in Whewell's view, of a piece in destroying true science. "Utilitarian philosophers," he argued, "maintain that we cannot have any sufficient inducement for research except the tangible benefit of our expected discovery." [6]

Yet it is clear from Whewell's sermons that for him too political economy could become apologetics. Like Whately he believed that economic thinking could be made to endorse the Christian concept of a beneficent Creator. He too was conscious that "the universe is full of symmetry and order." [7] He

[1] *ibid.* p. 341.
[2] *ibid.* p. 370.
[3] *ibid.* p. 141.
[4] John Stuart Mill, *Autobiography.* London, 1873, p. 225.
[5] Todhunter. *ibid.* Vol. II, p. 314.
[6] *ibid.* Vol. I, p. 56.
[7] *ibid.* Vol. II, p. 330.

prepared a sermon against the population theory of Malthus in order that his hearers might be spared "an oppressive and disquieting thought forced in among their belief and trust in God's goodness." In a veiled tribute to Richard Jones he commended those who combat "those errors by which foolish and unhappy men . . . darken the face of moral nature and divine truth." [1] All this was but part of the broader aim that Whewell sought to serve in contributing to the Bridgewater Treatises and in other works : the reconciliation of the New Science to theology.[2]

Whewell had "a very strong conviction that taking such a line of moral philosophy, political economy, and science . . . we might partly find and partly form a school." [3] But it is plain that neither Jones nor he solved the problem of economic method. Though they could laugh at the conceptions of Senior and Whately of such matters, and "rejoice to have such specimens of what is to be avoided," [4] the alternative was not so clear. Whewell sadly reflected : "Of induction applied to subjects other than Nat. Phil. I hardly know one fair example." Jones' own "Rent" he thought to be such, and perhaps Malthus' population data. "It is not that I do not think induction applicable . . . but I do not yet see my way to anything which I could propound concerning generals."[5] Herschel apparently had some misgivings concerning the mission of Whewell and Jones to produce true doctrines ' capable of being proved at any step of their induction between the most general and the most particular. ' "You will laugh at this criterion," wrote Whewell to Herschel, "but it is capable of being exemplified nevertheless." [6] Whewell was amused to hear of Jones' passages with Whately. But he warned that : "There is no want of abundant means of shewing the actual folly . . . of their method." More effective

[1] *ibid.* p. 331.
[2] E. C. Mossner, *Bishop Butler and the Age of Reason.* New York, 1936, p. 203.
[3] Todhunter. *ibid.* p. 118.
[4] *ibid.* p. 115.
[5] *ibid.* p. 116.
[6] *ibid.* p. 86.

would be examples of the "ascending method applied to moral sciences" [1] whereby general truth could be derived from specified data. But when Jones in his bafflement was caught "relapsing into the human frailty of definitions," Whewell pulled him up sharply.[2]

Adam Sedgwick was even more dubious than Whewell of the methods of inquiry used by Senior and Whately. Like Whewell, he condemned the attempt to transfer, without close discrimination, the methods of physical science to moral philosophy. "One great injury done to moral reasoning," he warned, "has arisen from the attempt to assimilate it too closely to the method of the exact sciences." [3] "Laws for the government of intellectual beings, and laws by which material things are held together, have not one common element to connect them." The error of "confounding moral with physical causation" has led to "the most revolting and unnatural conclusions." [4] In this Sedgwick resembled the German tradition of conceiving of human knowledge as falling into two fundamentally different categories, natural science, and social science, neither of which is amenable to the techniques of the other. The Germans had arrived at this position *via* the philosophy of Kant and Hegel, with its dichotomy between the worlds of matter and of spirit. The doubts of Whewell and Sedgwick about "the identity of the scientific method . . . in physical and moral sciences"[5] sprang rather from the fact that the legitimacy of the transfer had not been demonstrated because of the difficulties and dangers of reasoning on motives. Sedgwick, though he argued with great force that the detectable laws of the physical world afforded powerful evidence of the Divine intelligence, would not allow of attempts to construct laws in the political and economic fields, even for the purposes of "Natural Theology."

When the project was mooted in 1833 that the British Association should form a statistical section, Sedgwick, as

[1] *ibid.* p. 123.
[2] *ibid.* p. 155.
[3] *Discourse on the Studies of the University.* p. 131.
[4] *ibid.* p. 157.
[5] Todhunter. *ibid.* Vol. II, p. 126.

President for the year, pronounced his opinion in such terms that his *caveats* obscured his agreement. "Statistical inquiries might join the rest in harmony if they dealt with matters of fact, with mere abstractions, and with numerical results. Considered in that light they gave what might be called the raw material to political economy and political philosophy." [1] But there were great dangers. These were matters on which self-interest was strong ; attempts to reason on the data could only be disruptive. "These inquiries, however, were most intimately connected with moral phenomena and economical speculations—they touched the mainsprings of passion and feeling—they blended themselves with the generalisations of political science." It would be the end of the British Association's placid deliberations, free from the disturbing contemplation of the laws of economic reward. "Its meetings would no longer be harmonious but would be distracted by the worst human passions." Basically men like Sedgwick (and there were enough of them to fasten a self-denying ordinance for a time both on the British Association and the Statistical Society) really doubted the possibility (or wisdom) of a science of society. Sedgwick remained among those described by Senior, "who admit the importance of the subject, but distrust the conclusions of the science." [2]

Yet it might be thought that Sedgwick, Jones and Whewell could have found a way out of the impasse of method by recourse to statistical techniques of the kind developed by the Belgian Quetelet. He had taken from Laplace and Fourier the idea of applying the law of probability to social and economic statistics. Quetelet was well known to the Cambridge scientific circle and a warm friend of Whewell. But it was not to be. Of the activities of the Statistical Society Whewell wrote to Quetelet : "my opinion at present is that they would go on better if they had some zealous *theorists* among them . . . I believe that without this there will be no zeal in their labours and no connexion in their results." [3] In the end Whewell

[1] *Annals of the Royal Statistical Society*, 1834-1934. London, 1934, p. 5.
[2] *An Introductory Lecture on Political Economy*. London, 1826, p. 9.
[3] Todhunter. *ibid.* Vol. II, p. 229.

himself, perhaps disillusioned with the slow progress of inductive political economy and despairing that the right hypothesis would emerge from the collecting and sorting of the data, tinkered with mathematical models derived from Ricardo, and warming to his task, claimed to have improved on Mill's theory of international trade.[1]

Thus did the Cambridge scientists and the Oxford logicians of the 1830's differ. A third attitude was shortly to be set forth at Oxford. Pusey, Newman and their followers, who supplanted the Noetics in the late Thirties, started from the finality of religious truth, and the relationship between man and the Deity by which it was handed down. They maintained that "all sciences move like planets round the run of God's Truth." [2] This was an attitude hardly more favourable to Ricardianism than that of the anti-Paley group at Cambridge. For Ricardo had been clear in his own mind about the relative importance of theology and political economy for human welfare. Of Sumner, who abandoned political economy to devote the whole of his energies to theology, he wrote : "Whether in this latter pursuit he will have an equal chance of benefiting mankind, as in the former, I have great doubts, or rather I have no doubt at all . . . " [3]

Though the Oxford Noetics, led by Copleston and Whately, denounced the Tractarians as "diverting the energies of learners from the humanistic studies into lines mischievous and barren," and as "perpetuating priestly domination," [4] by the late 1830's they were beaten, and the leadership of Oxford thought passed for some years to the followers of Newman. Whately, for his part in the controversy, suffered the fate of one who in a pre-scientific age, sought to tread between the burning ploughshares of the rational and the revealed. He was accused of "Discerning that Revealed Religion . . . was

[1] *ibid.* p. 362.

[2] Mallet. *ibid.* p. 331. Pusey wrote : "All things must speak of God, refer to God, or they are atheistic . . . Political Economy without God would be a selfish teaching about the acquisition of wealth . . . " p. 320.

[3] *Letters of David Ricardo to Hutches Trower and others*, 1811-1823. ed. Bonar and Hollander. Oxford, 1899, p. 47.

[4] W. Tuckwell, *Pre-Tractarian Oxford*. London, 1909, p. 90.

antagonistic of Political Economy," and of permitting "the doubt to rest . . . on the character of Revealed Religion." [1]

Newman's considered views on political economy were enunciated after his departure from Oxford in 1844. They were set forth in his capacity as Rector of the new National University of Ireland. But they are the same views he had held earlier, in common with Keble and Pusey. For Newman, theology was still the queen of the sciences. He argued the danger that many subjects, political economy among them, "may be and are turned against Religion, by being taken by themselves," [2] and that the province of Theology "will be actually usurped by other sciences, which will teach, without warrant, conclusions of their own, in a subject matter which needs its own proper principles for its due formation and disposition." [3] Thus was political economy "a science at the same time dangerous and leading to occasions of sin, . . . if studied by itself, and apart from the control of Revealed Truth." [4] So he was led to set "Scripture and the Fathers over against Political Economy." [5]

The statement of the claims of political economy made by Senior as first Drummond Professor at Oxford is taken as illustrative of the dangers of perversion. In spite of the fact that "if there be a place where Political Economy would be kept in order, and would not be suffered to leave the high road and ride across the pastures and the gardens dedicated to other studies, it is the University of Oxford," [6] yet Senior made untenable claims for the study. This he had done said Newman, mindful of his own travail at Oxford, without causing "any excitement whatever on the part of the academical and religious public." [7] Senior had said "that the pursuit of wealth, that is, the endeavour to accumulate the means of future subsistence and enjoyment, is, to the mass of mankind, the

[1] W. Atkinson, *Principles of Social and Political Economy*. London, 1858, p. 297.
[2] *The Idea of a University. New Impression*, 1929. p. 95.
[3] *ibid.* p. 98.
[4] *ibid.* p. 86.
[5] *ibid.* p. 87.
[6] *ibid.*, p. 88.
[7] *ibid.* p. 89.

great source of *moral* improvement." [1] Against such a claim Newman invokes "our Lord, St. Paul, St. Chrysostom, St. Leo, and all Saints." So Newman represents political economy as saying to the world: "Easy circumstances make men virtuous." [2]

In short, no claims of 'goodness' may be preferred by the advocates of political economy themselves. Does this then coincide with the desire of Whately for a "neutral" discipline? Not at all. For Whately stood for a science that sought to avoid ethical premises; Newman for one which recognised a single legitimate source of morality. Newman appeals to all specialists, including political economists, "to go on quietly, in a neighbourly way, in their own respective lines of speculation, research, and experiment, with full faith in the consistency of that multiform truth which they share between them, in a generous confidence that they will be consistent, one and all, in their combined results." [3] But the starting point was all-important. Nothing could be done "if any such thinker starts from radically unsound principles, . . . if he be a Hobbes, or a Shaftesbury, or a Hume, or a Bentham." [4] In short, to Newman and his group, political economy, with all other secular conjecture, was subject to the doctrines of the Church.

It would seem easy, at first blush, to confuse the attitude of Newman with that of Thomas Arnold, the Noetic whose imprint on Victorian England was most lasting. As early as 1825, pondering the evils of self-seeking, he had lamented the spirit of self preferment in secular and church affairs, adding, "I think that those one-eyed men, the political economists, encourage this by their language about national wealth." [5] He was strongly averse to the tendency to demarcate certain aspects of *national* life, the economic among them, as secular, and hence immune from spiritual influences. Professor Willey tells us: "The point on which he first attained to clear certainty

[1] *ibid.* p. 91.
[2] *ibid.* p. 97.
[3] *Lectures and Essays on University Subjects.* London, 1859, p. 275.
[4] *ibid.* p. 292.
[5] Stanley. *ibid.* p. 60.

was that the Christian view of the true end of man has a direct bearing on ' our views of national wealth, and the whole question of political economy.' " [1]

Wherein, then, did Newman and Arnold differ? Arnold, of course, was as hostile as Whately and the others to the priestly pretentions of the Tractarians. He would "expel the antichrist of priesthood," and "restore the laity to the discharge of their proper duties." [2] Yet he was dissatisfied with the nature of the influence the teaching of political economy was having on the nation. How then to ensure it against aberration? Arnold would establish no jurisdiction over the construction and teaching of political economy. But he would create a new unity between the true and worthy aims of the Church and the State. The corrective was to be found in a change of national and institutional outlook, from which a new synthesis would emerge, capable of reducing to their proper proportions the claims of economic matters, and making of them an integrated part of the new national outlook. His was a solution in terms of renovating the context within which economic speculation was carried on. He sought to minimise the importance of economic method rather than to indicate the lines it should follow.

The first phase of the debate on political economy in the universities, carrying us to the mid-century, brought out these three distinctive attitudes. It is tempting to see in them, enunciated in a context so different from our own, the trilemma of our own day. Political Economy with Whately, rendered innocuous or at least inoffensive by closely prescribed terms of reference confining it to the apparently narrow phenomena of exchange, and thus emasculated, permitted to use the dangerous techniques of deductive and even mathematical reasoning. From this there could emerge, *ex definitione*, no compulsion to action, merely a set of theorems of exchange. Or Political Economy with Whewell and Sedgwick, regarded as a means of social amelioration, yet forbidden the illicit shortcut of instinctive choice of significant variables. So numerous are

[1] *Nineteenth Century Studies*. London, 1949, p. 56.
[2] *ibid*. p. 59.

the facts to be gathered, and so dangerous any assumptions of human motive, that conclusions of practical meaning are either extremely narrow in their application or indefinitely remote in time. Here was a second road to effective 'neutrality.' Or Political Economy with Newman: a study not neutral indeed, but mystical. The maximising rules of consumer and capitalist must be abrogated, but the alternative seems to get no further than vague hints about self-abnegation and anti-materialism. Could there by a renewal of canon law in economic matters, or an acceptance of Papal prouncements—would theology perform its supervisory role in this way? So, rigidly applied, these three philosophies would produce, respectively, a set of mechanical rules of narrow application, a group of institutional studies incapable of supporting the humblest generalisation, or a political economy that has abandoned the first attribute of science—the refusal to submit to tutelage. The task of selection and reconciliation of method awaits each succeeding generation. And though the task of applying policy might be easier if the kind of nation of which Arnold wrote could be brought to being, the problem of the terms in which it is legitimate and useful to study society would remain.

At this stage the academic economist had not yet fully emerged. Men on the perimeter of the subject, possessed of standards of judgment independent of it, were still untroubled by the fear of trespass; without diffidence they expressed their views on the problem of procedure. All these men, among the greatest university names of their generation—Whately, Whewell, Sedgwick, Newman, Arnold—were clergymen. Each believed economic truth to be part of the divine order; each had integrated his attitude to economics with his theology. And though they sometimes seem like men with a method seeking for problems, rather than some later specialists—men with problems looking for a method, yet they are worthy of remembrance because they saw that the proper focus of the interest of the universities in the new discipline ought to lie in its organon.

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Remedies for Localised Unemployment

Unemployment that is concentrated in particular localities has, in the recent past,[1] represented a significant part of total unemployment in this country. Six major Development Areas, having about one-sixth of the total insured population, accounted for some 29, 31 and 26 per cent. of total unemployment in Great Britain in 1932, 1937 and 1939 respectively (July figures). With a virtually unchanged fraction of the total insured population, they had about 45, 42 and 37 per cent. of total unemployment in Great Britain in 1946, 1947 and 1948 respectively (June figures). Moreover, the localised unemployment of the past two decades has been markedly intractable. The four Ministry of Labour divisions of Scotland, Northern, North-Western and Wales—in which the six major Development Areas named above are found—had in 1939 under 40 per cent. of the total insured population of Great Britain ; but they accounted for almost 80 per cent. of those who, at 1st May, 1939, had been continuously unemployed for three years or more.[2] At 31st March, 1950, the percentage of the total unemployed represented by those who had been unemployed over a year was 11·1 in Great Britain, and in the six major Development Areas 19·4. Evidently, then, in recent decades not only has localised unemployment been abnormal in its size, but also in its persistence. It still is, and promises to be, abnormal.[3]

This has not gone unrecognised. Various reports and publications [4] have put forward diagnoses of the causes of

[1] Lord Beveridge has shown that "There was a marked localisation of unemployment before the first World War, as after it." (*Full Employment in a Free Society*, p. 74).

[2] Calculated from the table in the report of the *Royal Commission on the Distribution of the Industrial Population* (Cmd. 6153), p. 169.

[3] "It seems, therefore, reasonable to expect that problems of structural unemployment will become more frequent as a consequence of the altered population trend." (Papers of the Royal Commission on Population, *Report of the Economics Committee*, g. 152).

[4] *Royal Commission on the Distribution of the Industrial Population* ; Dennison, *The Location of Industry and the Depressed Areas* ; Beveridge, *Full Employment in a Free Society* ; Oxford volume on *The Economics of Full Employment* ; White Paper on *Employment Policy* (Cmd. 6527).

localised unemployment and stated remedies for it. Yet the discussion of remedies has been less full than for general unemployment. Since localised unemployment is so considerable and persistent it is desirable that the means of combating it should receive fuller consideration. This article tries to contribute to such fuller consideration.

It is expedient first to examine the view that localised unemployment may be remedied by maintaining the general level of effective demand.[1] This may be done by considering various causes of such unemployment. Where it is an outcome of persistent general unemployment, obviously it is necessary to raise the general level of demand. The areas of localised unemployment would share the benefits of this. The early 'thirties provide an example. If the general level of demand had been higher then, there would have been less localised unemployment in the "Depressed Areas."

When localised unemployment occurs on account of cyclical fluctuation, again there is scope for general measures. Assuming that local areas heavily dependent upon export, or upon capital goods or durable consumption goods, are affected more than the country generally—as has indeed been the case hitherto—various measures could be taken to generate demand to compensate for the cyclical downturn in the demand for the main products of these areas. In the case of export industries, devices to stimulate private demand to replace the lost foreign demand have possibilities. For example, private persons could re-furbish their stocks of consumption goods, now largely exported, that have been insufficiently available to home users since 1939—such as textiles, furniture and decorated china. State action could stimulate such private demand—*e.g.* by tax remissions, larger social service benefits and smaller contributions and subsidies. The demand for capital goods

[1] *E.g.*, "Thus there might be something like full employment in, say, the South and Midlands, while there is still heavy unemployment in the depressed areas of Scotland, South Wales, Tyneside and so on. But, provided there is a Government policy of expanding effective demand, this state of affairs could not last very long; one reason why the pre-war depressed areas appeared so intractable was precisely the lack of such a policy." (The Oxford volume, *The Economics of Full Employment*, p. 76).

and durable consumption goods could be fostered similarly. Private investment demand could be raised by, *e.g.*, granting larger depreciation allowances which must be spent, tax remissions, subsidies and so on. Or again the State could act directly and buy for stockpiling, State industries or for public works' schemes.

But there are limitations to all such measures. Instances only need be given. As for export goods, our meagre foreign currency reserves forbid their large-scale absorption by the home market. Instead, it might be necessary to switch the productive resources involved to make substitutes for goods previously imported. If so, how could general measures to maintain demand cause the required transformation of production in the areas suffering localised unemployment? Even where absorption of former exports by the home market proved feasible, some would not suit domestic uses; others may be in surplus supply relative to demand; others again may have lost their foreign market for always—the remedy in this case being not to substitute lost demand but to turn the productive resources to other uses. As for capital goods and durable consumption goods, similar limitations apply. In addition, the remarkable post-war boom may have expanded productive capacity far above that needed to meet normal demand; and the cure for that is not to maintain demand but to reduce capacity. Alternatively, costs may have so risen as to be out of relation to present and foreseeable demand prices; but how could these be brought down by stimulating demand? Or technological change during the cyclical depression may have caused the products and processes of a localised capital goods industry to become obsolescent; and to maintain demand will not rectify that.

Doubtless it can be answered that, when general measures to maintain demand are unsuited, or fail to expand employment locally, they can nevertheless exorcise localised unemployment if the jobless workpeople emigrate. But it would be unwise to rely entirely upon emigration to cure localised unemployment. Displaced workpeople cling on because they hope their industry will recover or new opportunities to work in their home

town will materialise. Long-lasting unemployment breeds inertia—buttressed by social service benefits. Older workpeople are disinclined to uproot themselves. Occupational diseases and industrial accidents reduce employability, and therefore willingness and ability to migrate. The special skills of workpeople in one-industry towns and the high percentage of their labour force without skill limit ability to find work elsewhere.[1] Willingness to migrate is restricted by the possibility that the new employment may not be long-lasting or otherwise secure. Workpeople are less unwilling, usually, to migrate over short distances : but the policy of maintaining general demand cannot ensure this. The narrowing of occupational differences in wages and also of differences in wages between areas—both occurring in recent times—curtail a powerful incentive to migration. Houses elsewhere are scarce, and potential migrants must take their place at the end of the queue for municipal houses or pay high rents for privately-owned houses ; these are deterrents. In summary, as Lord Beveridge has said : " . . . local movement encounters, at a certain point, obstacles which cannot be overcome." [2] Even if they could be overcome, migration is seriously limited as an instrument for curing localised unemployment. At best, spontaneous migration works slowly—general employment has now been high for five years, but the movement of labour from the areas that have had relatively high unemployment during those five years has been moderate only. And spontaneous migration usually fails to clear the market, while it breeds secondary unemployment in the areas as and when migrants leave them. Lastly, migration may not be the most appropriate remedy for cyclical localised unemployment ; for on the upswing many of the emigrants may again be needed by the industries of the areas and would therefore be called upon to return home. Such switching about of labour in a short period is doubtful wisdom even if labour is willing to respond

[1] In the Development Areas—specially prone to unemployment—some 25 per cent. of those at present unemployed are disabled, nearly 70 per cent. are unskilled labourers and those over 41 years of age roundly exceed the average for the country.

[2] *Full Employment in a Free Society*, p. 86.

quickly enough ; when labour cannot or will not do so it is even more doubtful wisdom.

Where localised unemployment arises for structural reasons, general measures to maintain demand are likely to be less efficacious than in the case of cyclical unemployment. What is then needed is that the local areas concerned should alter their industrial structure. But how can the general maintenance of demand successfully incite this ? The example of shipbuilding may be used. This industry has nearly two-thirds of its total labour force in the Development Areas. Within those, shipbuilding is concentrated at a small number of places. When the inflated post-war demand passes away, the industry will have excess capacity and surplus labour. The general maintenance of demand can benefit shipbuilding areas in only two ways. One is by propping up the demand for ships above normal level. That would be unwise ; for superfluous ships would be useless. Moreover, costs may be prevented from falling in line with the fall of demand prices ; and that would hinder structural adaptation by the industry. Another way is by so maintaining the demand for goods in general that surplus shipbuilding labour might find work elsewhere. But, as stated above, emigration is of limited efficacy.

The causes of localised unemployment discussed so far are general in nature. But there are others that are specific and particular. Because history shows that they are important, these call for attention. A common cause of localised unemployment is the decay of the industry of a one-industry town. The only certain and complete remedies are either to replace the decayed industry by another, or for the whole of the workpeople of the town to move away. Neither of these will necessarily happen by maintaining the general level of effective demand. This has been high during the past five years. But throughout that time there has been more than the national average percentage of unemployment in places depending wholly or mainly on one industry—*e.g.* Milford Haven, Merthyr Tydfil, Pontypridd, Tredegar, Aberdare, Blaenau Festiniog and the Nantlle valley, Greenock, Bridgeton,

Parkhead, Springburn, Elswick, Camborne-Redruth and parts of the Lanarkshire coalfield. The decline of the predominant industries there has not, in fact, been offset by new industry. Reasons are not hard to find. The central reason is that, as before the war, industrialists fight shy of starting new enterprises in places suffering industrial decline. Their behaviour is not necessarily irrational. One-industry towns have few attractions for industrialists engaged in other kinds of production. For example, the labour force is specialised to a few skills, and older workers cannot readily be re-trained. Essential industrial services are often inadequate for other industries. Sometimes—coalmining areas especially—suitable industrial sites are few. Sources of raw materials, or markets, are remote and transport is costly. Such places are usually distant from the main stream of current industrial development. Last, amenities are scarce : and nowadays these count. Examples of these locational drawbacks include coalmining districts, slate-quarrying areas, china-clay mining districts, tinplate districts, shipbuilding towns and certain iron and steel towns. Nor has emigration availed. Despite fulsome opportunities of employment elsewhere, migration from the areas named above, relative to the total labour force, has been moderate only.

Where localised unemployment occurs because the growth of industry in an area fails to keep pace with the growth of its working population,[1] or industry leaves the area, a similar analysis applies. Again it is necessary either to introduce more industry or to rely upon emigration. But the maintenance of general demand will not ensure that new industry will go to a particular area. The reasons are varied. The most common reason is that industrialists do not ordinarily aim to distribute their industries solely or mainly to match the distribution of population. Indeed, experience of the working of the Distribution of Industry Act, 1945, shows that often enough industrialists expand their existing undertakings or set up new ones in places chosen for different reasons—

[1]Although Hoover may exaggerate when he says :—"In a settled country it can almost be said that the increase of population comes in just the wrong places." (*The Location of Economic Activity*, p. 110) this is a common cause of localised unemployment.

relying upon their power to attract labour from other firms. Other reasons include the preference of industrialists for low-cost areas ; the "tying" of certain industries to specific areas ; the propensity for ancillary industries to go near to the main ones ; the reluctance of "keyworkers" to migrate ; the pull exerted on lighter industries by large markets ; the attractive power of existing large industrial areas—and so on. Despite the continued high level of general demand since 1945, industrial growth has failed to match population growth in, *e.g.*, Merseyside, Hull, Glasgow, South Shields, the Hartlepools, Portsmouth and Plymouth. Nor, doubtless for the reasons stated earlier, has emigration succeeded in drawing off more than a small proportion of the surplus labour.

It is enough, perhaps, merely to mention briefly some of the more obvious of other possible causes of localised unemployment. These include alterations in State expenditure (affecting, *e.g.*, dockyards, military aircraft plants, armament firms) ; in State taxation (affecting, *e.g.*, firms making goods liable to purchase tax) ; in State controls (affecting, *e.g.*, firms using materials from dollar sources) ; in State foreign trading policy—*e.g.* removal of tariffs ; changes in private demand ; altered policies of nationalised industries—*e.g.* decisions by the National Coal Board to close pits ; technological change ; reorganisation by private firms which shuts down local plants ; the closing of the many branch factories opened in the Development Areas by firms domiciled elsewhere. Clearly, all these causes of localised unemployment are specific—some highly specific. Therefore, they do not lend themselves to general remedies. If the main industries of the areas concerned were to collapse, the maintenance of general demand could not ensure that new industries would go there. Alternatively, the movement of displaced labour away from them—in the volume needed, of the types required and to the places where there were suitable openings—could not be relied upon. In any case, such labour movement might be too slow. As the White Paper on *Employment Policy* states : " . . . it will not be enough to rely on the general maintenance of purchasing power to solve all the problems of local unemployment. A solution

on these lines alone would be too long drawn out and might involve the partial depopulation of industrial regions which are a national asset that we cannot afford to lose." [1]

To conclude : the answer to the question as to whether the general maintenance of demand can cure localised unemployment is that even in the most favourable circumstances its efficacy is limited. Since the causes of localised unemployment are specific as well as general,—and sometimes more specific than general—the remedies must be specific as well as general.

The outstanding specific remedy is the control by the State of industrial location.[2] This attacks localised unemployment by promoting appropriate industrial development in the areas concerned. In theory, the control of industrial location is a powerful instrument. But in practice, during the five years that it has been tried in this country, it has not been fully effective. Why? It can be fully effective only if there is complete power to influence industrial location. That has not been available in this country during the past five years. New enterprises have not been compelled to go to prescribed locations, nor have old enterprises been forced to shift from their existing locations. Instead, reliance has been placed upon inducements ; and these have been restricted, both in their nature and in their range. It is true that in the immediate post-war years the inducements proved to be influential. Later, however, they became less effective because the materials, plant and equipment to which the inducements gave preferential access became less scarce, and because the attraction provided by new factory building was limited by the cuts in capital investment made in 1947 and 1949. Other limitations have restricted the power to influence industrial location. An important one was the decision to apply the Distribution of Industry Act, 1945, and the Town and Country

[1]Cmd. 6527, g. 24.

[2]This was named by the *Royal Commission on the Distribution of the Industrial Population* ; Cmd. 6527 ; Lord Beveridge, *Full Employment in a Free Society* ; the Oxford volume, *The Economics of Full Employment* ; Prof. W. A. Lewis, *The Principles of Economic Planning* ; and the *Report of the Economics Committee* (Royal Commission on Population).

Planning Acts, 1947, only to industrial projects needing factory space of more than 5,000 square feet. For smaller industrial projects have been numerous ; and, since many of these have consisted of extensions of existing factories, they have discouraged the movement of industry out of established locations. Moreover, new enterprises starting in a small way have gone where they liked. Another significant limitation was the decision, taken early in 1947, wholly or partly to relax restrictions upon the location of new or old enterprises producing goods for export or to replace imports from hard currency countries. Still another was the waiving of the ban upon further industrial development in London and other congested areas when it was deemed essential to permit such development. Furthermore, many firms have been permitted to build factories or to site projected factories elsewhere than in the areas vulnerable to localised unemployment—*i.e.* the Development Areas. Up to 31st March, 1950, in the case of schemes approved or for which Industrial Development Certificates had been granted, under 30 per cent. of the total factory space was included within the Development Areas. Lastly, no compulsion has been used to cause firms that had moved to locations preferred by the State to stay there. Since a high proportion of the new industrial enterprises established in the Development Areas consists of branch units of firms domiciled elsewhere, this is significant. For there is a likelihood that branch units would be among the first to be closed when the need arose for individual firms to restrict output.

This brief account indicates that control of industrial location, as actually practised in this country hitherto, has been far short of complete. If it is to become as effective in combating localised unemployment as in theory it can be, the authority of the controlling body should be strengthened. The most forthright way to do that is to give the controlling body full power to compel industry to locate in prescribed places. Doubtless strong arguments could be mustered in support of compulsion : but it is assumed that economic opinion is against it. That being so, the only recourse is to

enlarge the scope, and increase the effectiveness, of inducements. Presumably, economists would not dissent if the efficiency of the industrial economy were not damaged by putting productive resources to inferior uses. The best single test would be the effects upon costs of production. Using that test, the following proposal may be made. Costs of producing industrial goods are a compound of the private costs incurred by the firm and the costs that fall to be borne by the community.[1] If a firm is located where the combined total of these is as low as possible, that location is the most economic one. For, at that location, the total cost of the firm's output, in economic resources, is the least.

Ordinarily, a firm would prefer a location where its private costs are least. But it would be rare for that location to be the one where community costs would also be least. Assume that there is a second location where community costs are lower than in the first location by an amount greater than private costs are higher. Then the combined total of private and community costs would be lower at the second location. To induce the firm to go there, it would be warrantable for the State to pay a subsidy to it equal to, but not exceeding, the saving of community costs. If the firm did go there, and the subsidy were paid, not only would total costs of production be lower, but the firm's net costs (private costs minus the subsidy) would be lower besides. There would, then, be economic justification for the choice of the second location.

The subsidy could provide that strengthening of inducements which is required if the controlling body is to have its influence over industrial location fortified as suggested above. For a subsidy which has not been available to firms hitherto[2] would be a powerful incentive to them to accept locations named by the controlling body. Moreover, firms in mobile industries would presumably be more disposed to go to

[1] By the costs falling upon the community is meant those costs that have to be incurred for all kinds of services incidental to industrial production which are not, in fact, now borne by private industry. For purposes of measurement, they would need to be expressed as annual costs.

[2] The quasi-subsidies, represented by the existing inducements, are—however reckoned—of relatively minor importance.

alternative locations than now; for investigations indicate that private costs for these do not differ much between one place and another. Above all, the assurance of a subsidy should remove that hesitation now felt by new enterprisers about starting new ventures—hesitation arising from the belief that they would win official encouragement only if they started at a location not preferred by them.

Objections can be made to the above proposal, *e.g.* that it embodies an impracticable ideal. Thus, extractive industries can only be carried on where the minerals occur. Again, some industries can only operate at their markets—such as purely local industries and service industries. But the principle is only needed where more than one location is possible. Its validity as a comparative principle therefore is unimpaired.

But would not the principle prevent industrialists from starting enterprises in areas having no community capital, or insufficient to meet the needs of additional industry? If so, there could be no new industrial centres like Corby, Slough, Leyland, Coventry. This criticism has no warrant. When population grows, community capital has to grow also. The principle would operate to determine where. Since the unit costs of community capital would differ little from one place to another, industrialists would be free to develop enterprises in places favourable to them. When population does not grow, even, it still is necessary to reconstitute community capital that is constantly wearing out, or becoming obsolescent. Whether such reconstitution should consist of repairs or of new construction, is determinable by comparing the expected return in service of a given investment. But part, at least will take the shape of new construction. Besides, even a static population, in an advancing society, will continually augment its stock of community capital. Again, since the costs of new construction will vary little wherever it occurs, business men will not normally be debarred from locating new enterprises where they prefer.

Yet would not the principle freeze the present distribution of population and labour? No. Two instances may be given. Assuming that community costs are equal in Towns *A* and *B*,

if private costs are lower in *A*, then private industry should locate itself there—and labour move from *B*. Again, suppose that private costs are lower in *B*. But assume that congestion of population and industry is so acute there that the community costs of additional industry and population would be higher than in *A*—which is not so congested. If the difference in community costs between the two towns exceeds the difference in private costs, then (since the combined total of private and community costs would be lower there) the new industry should go to *A*. Part of its needed labour supply could and should be drawn from the congested population of the other town. Furthermore, the principle could check a non-economic movement of labour. Thus, if it had been applied then, it could have stemmed part of the inter-war large-scale migration of labour from the "Depressed Areas" into the London area. For it would have enjoined that community costs should have been reckoned as well as private costs. Therefore, more new industry would have gone to the "Depressed Areas." For, having community capital that was under-utilised—as against the need to construct new community capital in the London area—the "Depressed Areas" would often have recorded lower community costs ; and, sometimes at least, these would have more than offset higher private costs in the "Depressed Areas."

Another criticism is weighty—that it is difficult to calculate community costs. But that difficulty could be surmounted. Moreover, the necessity to calculate them is growing. For the standards of community capital equipment are rising ; its range is extending ; and the many New Towns will call for expensive community capital. The demands upon our available resources will be so great as to call for study of how the resources should be deployed, and where ; this is a matter which concerns economists.

Last, Parliament might not agree to grant the subsidy—fearing that such an innovation would have widespread repercussions. But these need not be so widespread. For areas where it would be possible to save community costs would be few relatively—mainly those experiencing large and prolonged unemployment. Therefore, the aggregate subsidy would be

correspondingly limited, and hence possible repercussions. If the opposition of Parliament were too strong, an alternative would be to defray only the additional private costs that firms would incur by abandoning their preferred locations. That smaller subsidy would have more chance of acceptance. Because, moreover, the private costs of mobile industries do not vary significantly in different locations, the subsidy need not be high. There is, of course, the alternative of charging all industrial firms with the whole, or a greater part, of the community costs that they do not now bear. But it is hard to see how this could be devised so as to cause firms to go where they did not prefer but where community costs would be saved. Besides, the calculations of community costs would be an immense task—since they would have to apply to the whole country instead of being limited (under the subsidy method) to a few areas. Finally, unlike the subsidy proposal, it would be necessary to reckon the community costs for which each separate firm is responsible—a labour of forbidding magnitude and difficulty.

If the principle proposed were put into effect,[1] the State could substantially influence the location of industry—much more than it can do now. How could this help to counteract localised unemployment ? First, and pre-eminently, by setting up new industry, or causing the transfer of existing industry, into areas of localised unemployment. The purpose of this is to make good the chronic deficiency of employment found in areas where industry is declining, failing to keep pace with population growth, undergoing cyclical depression or structural modification. It has the supreme advantage of being a direct, and also a specific way of attacking chronic localised unemployment. Nor need this be at the expense of unemployment elsewhere provided that industry elsewhere is sufficiently expansive to employ the growing labour force. Given measures to maintain the general level of demand, that can be reasonably postulated. Further, to introduce new, or transferred industry, enables that labour to be given work which, because it could

[1]Or if the State were to increase its power to influence industrial location by other means.

not or would not emigrate, would otherwise be unemployed. And, as shown earlier, that would be no small gain. Second, the controlling body could so arrange the introduction into the local areas of new, or transferred industry, as to diversify their industrial composition. That would not only fortify their ability to reduce chronic unemployment, but also acute unemployment. This may now be briefly discussed.

Where localised unemployment is the outcome of persistent general unemployment, as said before, general measures are needed. But they may fail to benefit a narrow range of highly-specialised industry as much as a wider range of diverse local industries. That is where diversification can be useful. Again, the principal industries of the areas vulnerable to localised unemployment are investment goods industries. Here the findings of the Report of the Economics Committee of the Royal Commission on Population are relevant. They say, in the case of persistent general unemployment, "A true solution of the problem . . . must comprise in some degree a switch-over from investment to increased consumption" since " . . . maintaining an undiminished *total* volume of new investment would represent an attempt to stabilise the relation between the output of capital goods and the output of income goods at a ratio which may have ceased to fit our needs." [1] If their verdict is accepted, the investment goods industries in the above-mentioned areas may need scaling down. In that event, diversification would be a valuable means of absorbing the released labour. In addition, diversification may help to meet the danger—so clearly demonstrated during the inter-war years—that areas stricken by persistent unemployment may become cumulatively more depressed. For it could provide growing points at which new industry may revive their industrial life.

Where localised unemployment is caused by cyclical fluctuation, the local areas heavily specialised to capital goods and durable consumption goods suffer disproportionately, and those much devoted to export also. By reducing such specialisation, obviously diversification can combat the

[1] g. 169.

unemployment. For the consumption goods industries, service trades and home-market industries that it would bring to these local areas would be less affected by cyclical fluctuation.

Where localised unemployment is due to structural factors, the principal industries of the areas affected must then be contracted or closed down. Plainly, some places in these areas should not be resuscitated—because they are suited for no other industry, or the combined total of private and community costs is prohibitive. Other places may be subject to these and other drawbacks in lesser degree, and so be fitted to continue industry on a reduced scale. In other places again, existing firms may be able to change their products, find new markets or otherwise adapt themselves to structural change. In all such places the need for diversification is nil, or small. But in places suited for continuing industrial activity, and able to justify it if account is taken of private and community costs combined, the case for diversification is strong. It can provide the means by which the local areas can achieve the transition from declining to stable, or expanding industry. It can obviate the loss of time needed to effect the transition. It would be capable of utilising resources that might otherwise run to waste—*e.g.* idle labour not able to, or disposed to migrate, factory buildings that might remain empty, community capital which might decay, and so on. It could help to provide the flexibility needed to enable local economies to adjust (and readjust) themselves to structural changes which vary from one direction to another, or alter their scale from one time to another or involve different kinds of output during the changes. In a country more exposed to structural change now and henceforward—if only because of heightened dependence upon export, balance of payments difficulties and altered trends of population [1]—the flexibility imparted by diversification is of special value.

Where localised unemployment is due to detailed causes such as those illustrated earlier,[2] diversification has the

[1] "It seems, therefore, reasonable to expect that problems of structural unemployment will become more frequent as a consequence of the altered population trends." *Report of the Economics Committee*, g. 152, Royal Commission on Population.

[2] Pp. 75 and 76.

minimum value of an antidote. For it provides alternative means of employment which may compensate because they serve different types of demand and different geographical markets. At its maximum, diversification may breed industrial expansion that completely offsets such calamities.

Another specific means of dealing with localised unemployment is migration of unemployed labour from the areas concerned. This has already been referred to, and therefore it may be discussed briefly. When localised unemployment is structural in origin, and employment elsewhere is high, the case for migration is strong. It is stronger the more intractable are the local structural maladjustments and the longer it would take to correct them. It is strongest in the case of areas that are industrially moribund. When localised unemployment follows upon cyclical fluctuation, opportunities for employment elsewhere may be restricted. Moreover, if the cyclical depression is short, since the migrated labour may be needed in the areas again before long, transfer elsewhere has less use—especially because transfer inevitably takes time. If, however, employment can be maintained better elsewhere, then some movement of labour may be advisable. Where localised unemployment accompanies persistent general unemployment, and this goes unremedied, migration from the areas is of small value. The inter-war years show this clearly. They demonstrate that, despite much outgoing of workpeople from the Depressed Areas, their percentage of unemployment was about double the figure for the rest of the country. Only if demand is better maintained elsewhere could emigration there be advantageous.

But such possible effects need modification to take account of the limitations of migration met with in its practice mentioned on pp. 73-75. These find reflection in the fact that, although general employment has now been high for more than five years, the prophecy that this would evoke considerable geographical movement of labour has not been fulfilled. Nor can this be mainly attributed to the Distribution of Industry Act, 1945, designed to provide for the "(industrial) development of certain areas." For an investigation shows that the

percentage of the labour force that has since moved out of those areas (Development Areas) has exceeded that which has moved out of other regions. Even so, the pools of unemployed labour in the Development Areas have not been drained.

A last specific means of dealing with localised unemployment is to improve the efficiency of the main industries of the local areas, and to lower their costs. While it would be advantageous if this could be done for all such industries, it would be specially so for export industries making products which meet with a demand that is price-elastic. But the scope of this remedy is restricted. Even in the favourable case of a minor general recession, affecting some local areas more acutely, cost reductions in their basic industries may fail to generate sufficient demand to tell effectively against their unemployment. And if the economies are mainly achieved by increased mechanisation, this may render some labour surplus. In the case of a severe depression, a drop in supply price may not avail against a precipitous drop in demand for the capital goods and export products which are the chief source of employment for some local areas. When the localised unemployment is due to structural causes, alterations in industrial structure are the only means of remedy.

Such are the principal measures for dealing with localised unemployment. What are the conclusions? Limited reliance may be placed upon general measures. They are, however, useful as a background to others. It would be an act of economic folly to do without them. Clearly, the low level of localised unemployment since 1945 owes much to the high level of general demand. Yet this paper will have failed in its purpose if it has not won support for the thesis that localised unemployment is so specific a malady that it calls for specific treatment.

That specific treatment would certainly include attempts to improve the efficiency and to lower the costs of the main industries of the areas vulnerable to localised unemployment. It would also make appropriate use of migration. But it would rank the influencing of industrial location as the most efficacious remedy. This is not a perfect instrument. Besides

the limitations already named, it is inevitably restricted because a considerable part of the industry in this old country is already located. Much of this—although not as much as is sometimes supposed—is not movable for well-known reasons. That which is transferable cannot be shifted without costs which must be offset against the gains expected from moving it. The normal annual volume of new, mobile industry is likely to be a relatively small proportion of existing industry. At best, then, progress in increasing the influence of the State on industrial location and the diversification of industry must be slow. Furthermore, successful diversification calls for the solution of varied practical problems. Prof. Lewis and Dr. Meyer have demonstrated some of these when they discussed the effects of a slump in export upon the British economy.[1] And there are others. With all its drawbacks, however, the influencing of industrial location is a direct and logical means of combating localised unemployment.[2]

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[1] *The Manchester School of Economic and Social Studies*, September, 1949, pp. 257-65.

[2] A later article will deal with the practical problems of applying this remedy to a specific region of the country.

The Statistics of Absenteeism in Coal Mining

For some time to come any study of absenteeism will suffer from a lack of comparable statistical data. Coal mining is still the only industry which provides statistics on this subject on a national scale, and the accuracy of these statistics would, therefore, seem of considerable importance. However, regular returns of absenteeism in coal mining are of relatively recent date. Hardly any information exists with regard to earlier times.[1]

The present returns are still rather primitive and great care has to be taken in interpreting them and in drawing conclusions from them. The traditional attitude to absenteeism has been to treat it as an independent variable : such and such a percentage of the labour force would fall ill, would have accidents or would absent themselves without valid reasons, and this would affect output of saleable coal, number of shifts worked, etc. Only a few isolated attempts have been made to consider absenteeism as a dependent variable, as a function of other factors.

The Recording of Absenteeism.

Moreover, the terminology referring to problems of absenteeism is still rather confusing. At present the statistics published refer to *voluntary* and *involuntary* absentees ; sometimes the terms *avoidable* and *unavoidable* are used in the

[1] H. M. Vernon in his *Industrial Fatigue and Efficiency* (1921) mentions an investigation carried out towards the end of the last century into output of bituminous coal in Illinois, U.S.A. It was found that the days worked per year during the period 1894-96 averaged 184 days ; after the working day had been reduced from ten hours to eight hours, the number of days worked per year in the period 1898–1900 increased to 198.

Werner Sombart in *The Quintessence of Capitalism* illustrates the lack of eagerness for work in pre-capitalist times by quoting an early study of the Bavarian mining industry in the sixteenth century. According to this study miners worked in one case 123 days out of a possible 203 days, and in another case they were at work 99 days out of 161 days, etc.

same sense but there is also a cross-breed of *reasonable* absenteeism which stretches over all categories.

Reasonable absenteeism would seem to be the most important measure. It would indicate how much absenteeism can be expected either under favourable circumstances or under average circumstances. To find such a standard of reasonable absence from work, controlled experiments would have to be carried out in mines with different working conditions, at different times of the year and with different types of workers. For the time being this standard is as much guesswork as is the relation between voluntary and involuntary absenteeism.

From the evidence given to the Royal Commission on the Coal Industry, 1925, it seems that a clear distinction between different kinds of absentees was not considered of great importance at that time. When, for instance, one of the witnesses, a member of the Executive Committee of the Miners' Federation was asked what reasonable allowance they considered should be made for unavoidable absenteeism, he answered that they had not considered that point at all. There had not been a call on them to estimate when their men ought and ought not to be at work. They estimated involuntary absenteeism at about 5%. The same estimate was given by the Permanent Under-Secretary of the Mines Department who could give no independent information on what proportion of absence would be due to unavoidable causes and accepted the above estimate given by the Coal Mining Organisation Committee (representing owners and workers) which had been organised at the beginning of World War I.

Only very recently—in 1949—a committee representing the National Union of Mineworkers and the National Coal Board was set up to establish a standard of *reasonable* absenteeism. As long as a worker's absence from work remained below this standard, no punishment would be inflicted upon him other than loss of wages for missed shifts and loss of bonus under the five-day-week agreement. Under *reasonable* absence the Committee understood a period of up to three days a month. Assuming the five-day-week and thus

on the average, a working month of 22 days, these three days would correspond to a rate of absenteeism of 13·5% (3 : 22). Accepting the above-mentioned 5% for involuntary absenteeism, we would be left with some 8% of "reasonable voluntary" absenteeism, that is absenteeism which is not involuntary and yet not considered unreasonable. The 1925 Royal Commission on the Coal Industry found that absenteeism in coalfields averaged four weeks a year or 8·5%, varying between 11 days and 39 days, or 4·2% and 14·7% respectively. In 1938, total absenteeism—voluntary and involuntary—amounted to 6·44%.

However, as will be explained later on, the five-day-week is not uniformly worked, and the three permitted days would represent a quite different percentage in mines with say 25 working days. Also the considerable difference between the estimates of 1925, 1938 and 1949—even allowing for the changing general conditions during this period—must raise doubts as to their reliability. It seems that the greatest weakness of absentee statistics arises from the method by which the relevant data are collected. Before the 1925 Royal Commission, it was stated that no returns of accidents and sickness were handed in as causes of absenteeism. The absentee figures were obtained from the joint accountants' returns. Reports on absentees were filled in by firemen, bankmen and lampmen. Sometimes it was sufficient for a man to report for work in order not to count as absent even if he left the colliery again soon afterwards. On the other hand, someone being late for work might be registered as a full day absentee.

It might be said that this is past history. To-day records distinguish between voluntary and involuntary absenteeism; but the hearings of the 1925 Commission demonstrate that, for a very long period, the recording of absenteeism had been carried out in a haphazard way and without close attention being paid to the problem. Thus there is no tradition of collecting statistical evidence. Some of the recent Colliery Year Books give over 100 pages of statistics without a single table on absenteeism.

At present, absentees are reported and recorded either by the appropriate underground overman or surface official, or, when proper facilities exist, by the time registrar. These records are then passed on to the clerical staff dealing with the payment of wages, either directly at the colliery or at the "group level." The records are thus mainly kept with a view to wages and discipline and without much regard to the needs of social science and of economic statistics. It is left partly to the judgment of the overmen, surface officials and time registrars and partly to the office staff to determine how far a case of absenteeism exists and whether it is to be considered voluntary or involuntary. It is quite feasible, and indeed probable, that collieries, overmen and office staff will differ in their interpretation of these vague terms.

Voluntary and Involuntary Absenteeism.

It is difficult to find a clear dividing line between voluntary and involuntary absentees, the two categories fading into each other. And the category of the voluntary absentee may range from the worker who, for no other reason but permanent laziness stays away from work, to the worker whose wife or mother has fallen ill and needs his presence.[1]

At first sight it seems that involuntary absence is that caused by illness and accidents, and the rest is voluntary. The decisive difference is, however, or until recently has been the existence or non-existence of a doctor's certificate. If, for instance, the minimum period to qualify for accident

[1]It may be difficult or impossible to establish *the* cause of absence of a worker. Absence from work may result from a series of causes none in itself sufficient to cause absence : Undernourishment, overwork, high taxation, a football match, illness of a close relative, a quarrel with a foreman or with a fellow-worker or at home, a surplus of income, a hangover, a slight attack of rheumatism or of flu, working with a new machine or with a newcomer, any combination of factors as these might induce a miner to stay at home rather than go to work. It may be an additional mile to cycle in bad weather or against the wind which has raised the marginal disutility of work above unity. Only a scientific investigation into the background of an absentee could yield a useful classification : one would have to consider his age group, marital status, skill, general state of health, social behaviour, home conditions, working conditions, and the distance between his home and his work, etc.

compensation is four days (and the corresponding period for sickness benefit is three days), and if the miner is absent for three days (or in the latter case two days), and will therefore not claim compensation, he will be very reluctant to queue in a doctor's waiting room for a certificate. But without the certificate he will frequently have been counted as a voluntary absentee however sick he may have been. On the other hand, if we take the doctor's certificate as a criterion, we would have to allow for the fact that some doctors are more reluctant than others to grant certificates. In addition, not all sickness and accident records rely on the doctor's certificate as establishing involuntary absence. Thus the same type of short-time sickness absence might be counted as voluntary one time, and as involuntary another time. According to the *Ministry of Fuel and Power Statistical Digest* voluntary absenteeism "means absences for which no satisfactory reason is given." This definition leaves a wide field for interpretation.

Another complicating factor is the influence of economic considerations on claims for compensation. Although no large scale enquiry into this problem has been undertaken so far, some scattered investigations suggest that in times of depression the claims for compensation increase. When wages are low the disutility of labour increases when measured against the payment of compensation and a prolonged period of recovery. A worker might, therefore, stay away for a few more days than he would have done under more favourable income conditions ; he will obtain his medical certificate and the same illness or minor accident would put the same worker into the category of involuntary absentees under unfavourable economic conditions and make him a voluntary absentee in times of boom and prosperity.

It may be for reasons like these that estimates about the relation between voluntary and involuntary absence from work differed considerably in the past. While the Coal Commission assumed a relation of about 50 : 50, the Medical Research Council believed voluntary absenteeism to be higher. From the data on both types of absenteeism now being published it emerges that the relation varies without a clear

pattern. During the period January, 1944, to June, 1946, involuntary absence among face workers was higher than voluntary absence up to December, 1945, when the relation became reversed. Among all workers involuntary absence was lower in December, 1945, and from April, 1946 ; during the rest of the period it was above the rate of voluntary absence. During these thirty months the ratio of voluntary to involuntary absence among face workers ranged between 65 : 100 and 125 : 100. During the second quarter of 1946 voluntary absenteeism was lower than involuntary absenteeism among surface workers, considerably higher among face workers and slightly higher among "other underground workers." The highest rate of involuntary absence of face workers was 11·42% in February, 1945, and that of voluntary absence 11·30% in January, 1946.

Occupational and Regional Differences.

The suggestion made in some investigations that voluntary and involuntary absence from work move together up and down is not supported by the evidence of the above case. Actually during the thirty months' period the two types of absenteeism among face workers moved in opposite directions during seventeen months. It has also been frequently postulated that absenteeism among miners is highest on Mondays. Again very little evidence is available ; however, in the Report of the Coal Commission we find a table giving absenteeism in the various districts on each day of the week ended 17th October, 1925.

According to this table absenteeism among face workers was highest on Mondays in Northumberland and Durham ; in Leicester, it was equally high on Mondays and Tuesdays ; in West Yorks., Nottingham and South Wales it was highest on Saturdays, and in Scotland on Tuesdays. Among other underground workers absenteeism was highest on Mondays in five districts ; it was highest on Wednesdays in West Yorks., on Thursdays in Scotland, and on Saturdays in South Wales. Among surface workers it was highest on Mondays in Durham

TABLE I

PERCENTAGE OF ABSENTEEISM AT COAL MINES IN THE VARIOUS DISTRICTS OF BRITAIN ON EACH DAY OF THE WEEK ENDED 17th OCTOBER, 1925

	Northbld.	Durham	South Yorks.	West Yorks.	Nottghm. Erewash	Leicester	S. Wales Monm'th.	Scotland
At Coal Face								
Oct. 12th : ...	**14·80**	**9·03**	14·35	10·67	7·21	**3·80**	5·49	3·52
13	7·33	6·73	11·57	7·19	6·05	**3·80**	5·40	**4·08**
14	7·05	6·25	**16·72**	10·14	8·21	**2·50**	5·15	3·61
15	6·94	6·09	14·67	11·19	7·35	2·94	5·01	3·94
16	**6·42**	6·77	12·08	7·28	8·07	3·47	5·58	3·31
17	11·71	8·78	**13·72**	**13·99**	**10·48**	(0·74)	**8·17**	2·97
Average	8·89	7·13	13·85	9·41	7·59	2·93	5·74	3·57
Elsewhere Underground								
Oct. 12th : ...	**12·04**	**7·18**	**12·15**	7·62	**7·11**	**6·40**	4·91	2·67
13	5·63	5·57	8·84	6·65	5·23	4·70	5·72	2·91
14	5·58	5·25	9·41	**8·24**	5·78	3·10	5·19	2·92
15	5·56	5·49	10·77	8·13	4·74	4·51	5·42	**3·12**
16	5·24	5·46	8·60	6·33	6·17	4·50	5·62	2·71
17	8·94	5·98	10·78	**8·23**	4·50	(0·80)	**6·26**	1·76
Average	7·07	5·81	10·02	7·38	5·61	4·04	5·51	2·68
Surface								
Oct. 12th : ...	4·03	**4·62**	7·19	**5·95**	6·70	2·90	3·13	2·02
13	3·47	4·05	7·07	5·04	5·75	2·60	3·19	2·08
14	3·45	4·20	**7·50**	5·31	5·21	1·30	3·30	2·10
15	3·72	3·87	7·24	5·60	5·21	2·20	3·29	**2·16**
16	3·49	3·97	6·03	4·45	8·82	2·50	3·56	1·78
17	**6·43**	4·21	**6·72**	5·20	**9·14**	(0·50)	**3·75**	1·09
Average	3·96	4·15	6·98	5·26	6·47	2·06	3·37	1·97

and West Yorks. ; highest on Saturdays in Northumberland, Nottingham and South Wales ; highest on Wednesdays in South Yorks. and highest on Thursdays in Scotland.

So far no more detailed classification of workers exists in the returns of absenteeism elsewhere than by the three main categories, "at the face," "underground," and "surface" ; before 1943 all workers underground were given as one category. We have seen how greatly the classes of workers differ in their rate of absenteeism, and in the rate of change, and it is quite possible that a more thorough classification would yield interesting results. Men at the coal face consist of five main types which greatly differ in the type of work : coal getters, rippers and brushers, packers and roof support withdrawers, coal cutter men and cleaners-out, pan or conveyor shifters and "others" (including drillers, shot firers, haulage hands and maintenance staff employed below ground). "Elsewhere below ground" consists of four main groups : haulage work, repair work, development work, others.

With continuous technical change the proportions between the various types of workers change, and as each type has a special rate of absenteeism, absenteeism will change on account of the change in the proportions between the types of work. For instance, the ratio of face workers to others underground and to surface workers was

in 1905	..	100 : 72 : 42
in 1924	..	100 : 100 : 51
in 1945	..	100 : 94 : 56

and the ratio of workers underground to those above ground was

in 1905	..	100 : 24
in 1924	..	100 : 25
in 1938	..	100 : 26
in 1945	..	100 : 29

The influence of these changing ratios would again vary according to district, not only because the proportions in the type of worker would show regional differences, but also because the difference between the rate of absenteeism of face workers and surface workers is not the same in all regions.

This can be seen in Table II, taken from the Report of the 1925 Coal Commission.

TABLE II

ABSENTEEISM OF FACE WORKERS AND SURFACE WORKERS, BY DIVISIONS

Division	Percentage Absenteeism		
	Coal Face	Surface	Ratio
Northumberland	8·89	3·96	2·2
Durham	7·13	4·15	1·7
South Yorks.	13·85	6·98	2·0
West Yorks.	9·41	5·26	1·8
Nottingham	7·59	6·47	1·2
Leicester	2·93	2·06	1·4
South Wales	5·74	3·37	1·7
Scotland	3·57	1·97	1·8

THE EFFECT OF INCOME AND OUTPUT.

It is sometimes suggested that the higher rate of absence among face workers is the result of higher pay, and that in general higher income leads to higher absenteeism. We have seen that in cases of claims for compensation rather the opposite development has been observed. In other cases it might prove difficult to separate the effect of harder work on absenteeism and the effect of higher pay being the reward for harder work. During the depression of the inter-war period *lack of trade* left the miner with so much leisure that there was little need for additional voluntary absenteeism. During the more prosperous years he might substitute voluntary absenteeism for absence due to lack of trade. This might be the result not so much of his higher income as of the greater amount of work. Correlations of wages and absenteeism should, therefore, be viewed with great caution.

For similar reasons, data on absenteeism relating to conditions prior to and after World War II can be compared only in so far as they take account of this factor of want of trade which is non-existent in the years during and after the war. The extent of loss of working days as a result of want of trade can be seen from Table III.

TABLE III

EFFECT OF WANT OF TRADE ON LOSS OF WORKING DAYS

Period	Number of Coal Winding Days lost through Want of Trade	
	Per Quarter	Per Year
1921 — 1925	6·0	24·0
1926 — 1930	10·5	42·0
1931 — 1935	12·9	51·6
1936	8·5	34·0
1937	4·3	17·2
1938	8·7	34·8

Annual Average 1921—1938 : 37 days.

These 37 days might be compared with the new "standard" of "reasonable" absenteeism of three days a month (see page 90). In this connection evidence given before the Royal Commission, 1925, might be recalled ; it was stated then that the percentage of voluntary absenteeism was greater when work was available for 5½ or 5¾ shifts per week than when there was only work for 3½ or 4 shifts. It is thus quite possible that a large part of the difference in the rate of absenteeism between the pre-War II and post-War II period represents less a change in the actual number of working days lost than a change in the cause which led to this loss (want of trade being replaced by absenteeism). In this case the total effort of the miner would, more or less, have remained the same, although the statistics on absenteeism would create a rather different impression.

A comparison of inter-war and post-war data on absenteeism should also take into account changes in taxation. Recently the idea has been gaining ground that a major cause of absenteeism is to be found not so much in wages having reached a relatively high level, but rather in their being lowered by heavy taxation. In both cases the additional effort does not seem to be worth while (in the former case in relation to the worker's needs, in the latter case in relation to his efforts). Although it is quite possible that such effects do exist, no data or investigations are available which would permit any reasoned judgment. The range of earnings in mining is so wide that any tax structure might produce higher absenteeism with some categories of workers. A higher tax might increase absenteeism of the better paid workers and decrease that of the lower paid workers who want to maintain a given standard of living. But, on the whole, absenteeism is likely to have been affected one way or another, by the scale of change in taxation compared with pre-war times.

One line of statistical measurement would be worth following up, that is to investigate if there is any significant relation between absenteeism and productivity ; does a higher degree of mechanisation and technical efficiency lead to a higher or lower rate of absenteeism ? The regional figures as given in the N.C.B.'s statistics are too crude to allow any conclusions ; but, on first sight, it seems remarkable, even if it were only a coincidence, that the three divisions in England and Wales with the lowest output per man-shift show also the lowest rate of absenteeism. Much more detailed data, especially the records of individual pits would be needed for a proper study of this relation.[1]

[1]It is a deplorable effect of centralisation that local records are sent to the centre of the Departments concerned which are extremely hesitant to publish any results which might antagonise some section of the community or strengthen some opinions which are not shared by others. (Statistics on Miners' Diseases are no longer available by counties, but only by regions, and the Regions of the Ministry of National Insurance do not always coincide with the Divisions of the National Coal Board).

TABLE IV

RELATION BETWEEN ABSENTEEISM AND OUTPUT

Division	Absenteeism Percentage		Output per Man-shift	
	1949	1948	1949	1948
Northern	9·64	8·47	19·9	19·0
South-Western ...	12·24	10·57	17·6	16·6
North-Western ...	12·28	11·78	20·5	19·4
South-Eastern ...	13·27	13·08	22·8	20·7
East-Midlands ...	13·24	12·96	33·2	31·7
North-Eastern ...	14·80	14·38	25·3	24·0
West-Midlands ...	14·83	14·84	25·7	24·7
Scottish	10·58	9·64	22·4	22·4

THE MEASUREMENT OF ABSENTEEISM.

The current measurement of absenteeism is, statistically, not very satisfactory : the number of actual shifts worked are expressed as a percentage of the number of shifts possible. The number of shifts possible is arrived at by adding to the number of actual shifts worked the number of days lost. Shifts worked are counted according to the normal working week so that the additional half-hour worked at present is counted as an additional $\frac{1}{5}$ shift. On the other hand a miner who is absent is recorded not as having lost $1\frac{1}{5}$ shift but only 1 shift. Thus, whenever the half-hour additional work is discontinued, statistics will show an increase in absenteeism which will be due to this shift-accounting practice.[1]

[1]To take an example : If there were 100 men on the colliery book, 90 working and 10 being absent, the number of worked shifts would be $90 \times 1\frac{1}{5} = 96$ shifts, the absentees would account for 10 shifts ; therefore number of possible shifts: 106; absenteeism $\frac{10}{106} = 9{\cdot}3\%$. If one standard would have been applied to shifts worked and shifts lost, the number of possible shifts would have been 100 and absenteeism 10%.

The concept and measurement of "possible" shifts is also open to misinterpretation. How far can a shift lost by unavoidable, involuntary causes be considered "possible"? Moreover, an increase in the number of possible shifts might have been caused by an increase in the number of shifts actually worked. It is thus possible that a mining community increases the total quantity of work done, while a higher absentee percentage suggests a decrease (as the number of absentees will probably rise with the rise in the number of shifts worked).

In this way absentee statistics are confusing. For instance, the number of possible shifts increased from 5·30 per week in 1938 to 5·74 per week in 1944. The number of actual shifts worked was in both years 4·96. As a result, the absentee percentage in 1938 was 6·44% and in 1944, 13·62%. The working of 4·89 shifts in February, 1948, produced an absenteeism of 11·71%, but 4·94 shifts in February, 1947, resulted in 17·76% absenteeism. However useful it is to measure absenteeism in the above percentage way, it is open to misinterpretation if not supplemented by the number of shifts possible and of actual shifts worked.

The latter has now been published in the Reports issued by the National Coal Board so that it is possible to compare the average number of shifts worked per man and the percentage of absenteeism. The following table shows a few examples for numbers of shifts worked and absenteeism rising and falling simultaneously (if one week in 1948 is compared with the corresponding week in 1947).

There are some extreme cases like week 39 in Scotland, when the number of shifts worked increased from 4·08 to 4·80 and the percentage of absenteeism was given as rising from 6·46 to 10·26.

TABLE V

RELATION BETWEEN SHIFTS WORKED AND ABSENTEEISM, 1947 and 1948

Week	Shifts worked		Percentage	Absenteeism
	1948	1947	1948	1947
1	5·02	5·10	10·90	15·20
7	4·91	5·11	11·39	15·96
10	4·95	4·98	11·40	16·38
13	3·71	4·74	12·08	13·96
39	4·79	4·69	12·66	10·25
43	4·91	4·83	12·01	9·77

In the Report for 1949 we find the following results :

TABLE VI

RELATION BETWEEN SHIFTS WORKED AND ABSENTEEISM 1948 and 1949

Week	Shifts worked		Percentage Absenteeism	
	1949	1948	1949	1948
5	4·90	4·88	12·47	12·01
12	4·77	4·50	13·94	10·69
13	4·83	3·71	13·40	12·08
27	4·55	4·55	11·38	10·30
28	4·68	4·65	11·94	11·11
31	3·21	3·09	15·13	14·22
51	4·85	4·47	12·17	11·86
52	3·27	3·29	15·69	17·67

Week 51 of 1949 is remarkable also in as far as the number of shifts worked, if compared with week 50 declined from 5·25 to 4·85, while absenteeism rose from 8·66% to 12·17%.

THE EFFECT OF THE FIVE-DAY WEEK.

The introduction of the five-day week greatly complicated absentee figures, and as a result comparisons of different divisions or of different periods has become of doubtful value. So long as the official working week consisted of five-and-a-half shifts, a miner who missed a half day's work on a Saturday, was counted as an absentee. With the introduction of the five-day week and the official abolition of the Saturday shift, on the other hand, this absence was naturally not recorded. The effect of the five-day week which was introduced on 1st May, 1947, on the statistics of absenteeism can be seen from the following table.

TABLE VII

EFFECT OF 5-DAY WEEK ON ABSENTEEISM

Division	Absenteeism, Percentage, week ending	
	May 1st, 1947	May 8th, 1947
Scottish	10·32	5·55
Northern	9·67	6·28
North-Eastern	17·00	9·28
North-Western...	15·47	9·62
East-Midlands	16·29	8·68
West-Midlands	18·44	10·04
South-Western	11·46	7·50
South-Eastern	19·32	10·54
Great Britain	13·73	8·06

When the coal industry's output remained below the target figure new working arrangements were made. According to this new agreement which came into force in November, 1947, each Divisional Board and Area Executive could chose between arranging an extra half-hour a day or extra Saturday

shifts or they could leave this choice to the individual collieries. The additional work was to count as overtime, so basically the five-day week remained in force.

In Northumberland, and at about half the collieries in Durham, the extra half-hour was chosen. In most of the other mines Saturday shifts were preferred, but some decided to work every Saturday, others to work every second Saturday. As this additional work was to be paid at overtime rates, the agreement provided, that together with the introduction of the five-day week, bigger daily tasks were—where possible—to be introduced ; here again different divisions and different collieries reacted in a different way. In some divisions this "re-assessment" went very smoothly, but elsewhere difficulties were encountered and in many cases it proved a failure.

The agreement for the expansion of working hours was to expire in April, 1948, but was renewed for another year ; in the course of the year, according to the National Coal Board's Report "many collieries stopped overtime working, mainly those at which Saturday shifts had been arranged." This was due partly to the week-end sporting events ; often there would not be sufficient men available to make a team, so that even those who had come to work could not be used. Out of 980 collieries, 586 worked overtime at the beginning of 1948 ; then some 84 discontinued overtime in the course of the year.

In Cumberland alternate Saturday shifts were worked at the beginning of 1948, and abandoned towards the end of April. In the North-Eastern Division, 47 collieries out of 111, discontinued overtime during 1948. In Northumberland and Durham, out of 201 collieries, 133 worked overtime on Mondays to Fridays and 34 worked on Saturdays. In West-Midlands, out of 60 collieries, 38 worked overtime, mainly on Saturdays. In Scotland, 100 collieries out of 187, had re-assessed the daily tasks at the end of 1948.

The picture which emerges is statistically not very satisfactory ; we know that there is a relation between Saturday-work and absenteeism ; that there is a relation between the quantity of work done, the hours worked and the

rate of absenteeism. At the beginning of 1947 a new scheme was introduced, abolishing work on Saturdays. Half way through the year overtime was introduced ; some mines worked longer hours during the week, in some cases with, in other cases without reassessment of tasks ; some mines worked on Saturdays, some every second Saturday, some did not work overtime at all ; some started working overtime and abandoned it in the course of 1948. Still, the absentee rates of the collieries are added up to divisional and national totals and the rate of one year is compared with that of another.

The Report of the National Coal Board considers absenteeism as one of the main factors affecting productivity, next to man-power and output per-man-shift. It appears in the main summary tables as having decreased from 12·43% in 1947 to 11·55% in 1948. But this comparison is rather meaningless. Actually 1948 can be divided into two marked periods : up to and including the week ending 1st May (week 17), absenteeism is some 3–4% lower than in 1947 (that is before the introduction of the five-day week). From the week ending 8th May, absenteeism in 1948 is some 1–2% higher than in the previous year.

The explanation of this phenomenon is not too difficult to find. As mentioned above, in week 18 ending 8th May, 1947, absenteeism dropped by more than 5% statistically as a result of the five-day week. Therefore only those weeks of 1948 (or any later year) can be compared with 1947, which follow week 18. Doing this, we find, that the 5% decline was not maintained and that the rate increased again by 1%–2%, probably owing to the changes in the working of the five-day week as described above and as a result of the adjustments and reassessments of tasks connected with the five-day week. Correspondingly, in the weeks preceding 1st May, absenteeism is lower in 1948 than in the corresponding weeks of 1947, not by the full 5%, but only by some 3–4%.

It would be useful if the National Coal Board in future reports would provide some information and explanations on absenteeism in addition to the data given in the tables. At

TABLE VIII

PERCENTAGE OF ABSENTEEISM, ALL WORKERS, 1946–1948

Week	1946	1947*	1948
2	17·65	16·42	11·05
7	17·40	15·96	11·39
12	17·19	13·87	10·69
17 (1st May)	14·01	13·73	10·52
18	14·32	8·06	10·10
19	14·48	7·83	10·24
22 (7th June)	13·67	9·54	9·99
27	15·94	9·32	10·30
32	17·65	11·66	12·92
37	16·33	10·76	12·87
42	15·13	9·91	11·86
47	13·83	10·19	11·74
52	18·34	17·10	17·67
Annual Average	15·95	12·43	11·55

* In comparing individual weeks, one has to keep in mind difficulties created by the calendar, which caused the N.C.B. to introduce a week 53 for the year 1947. In the above table, for sake of comparison, this 53rd week has been considered week 52 and the other weeks of 1947 have been adjusted accordingly.

present, in spite of the importance attached to absenteeism, very little about this problem can be found in the text. The attitude to the measurement of absenteeism—giving only a few bare data—is perhaps only a by-product of the Board's general ideas on the subject.

Right at the beginning of the Report for 1949 we learn, for instance, that "absenteeism continues to cause the Board concern ; and certain action taken by managements is described in section 278." The eager researcher is told in section 278,

that in 1948, "4,900 men were dismissed for bad attendance, undisciplined behaviour and so on." This measure seems to have proved so successful that absenteeism increased in the following year, 1949, from 11·55% to 12·34% and output of 1·8 million tons was lost owing to less regular attendance. Thereupon another 8,000 men were dismissed in 1949. In addition, fit surface workers who refused to change to underground work, were dismissed or, in the case of those of military age, called up for military service by the Ministry of Labour. In addition, a system of rejecting new recruits to the mines was started. This is section 278, and it is reflected in the statistical tables.

The tables do not go beyond the general classification by divisions and "face workers" and "all workers." There are no further subdivisions and no cross classification according to voluntary and involuntary cases.

Conclusion.

We are thus driven to rather negative conclusions : with the statistical material at our disposal it is not possible to distinguish between the overpaid and the underpaid absentee, between the occasional absentee and the permanent idler, between voluntary and involuntary absenteeism. The present method of giving the absentee percentage may be misleading, as it concentrates on the average absentee, while the number of possible shifts and of shifts actually worked, and also a frequency distribution of absentees according to days absent per month is of equal importance.

Further, correlations between wages and absenteeism might be misleading because other factors—taxation, claims for compensation, quantity and intensity of work—enter as secondary causes. Finally, for establishing a "standard" for absenteeism, the pre-war period is of little avail because it was distorted by lack of trade.

In order to measure absenteeism, certain principles would have to be generally adopted, for instance :

How to treat overtime in total absence.
How to treat absence of less than one day and of less than three days.
How to treat Saturdays and Sundays when absence exceeds one week.
How to treat employees still kept on the records but not likely to return to employment.
How to treat—in times of slack trade—absence of part-time workers and absence in periods of short time work.

This still leaves us with the problem of establishing a standard of reasonable absenteeism. From all that has been said above it emerges that it would have to be a scale of standard absentee ratios rather than a single ratio. This scale would vary, above all, according to district and according to occupation. With this proviso it may even be possible to vary the ratio according to the day of the week. It has been shown that a kind of national week-day on which the miners absent themselves from work does not exist. Once these basic ratios have been established, modifications could be introduced according to working conditions at each given pit. In this way it might be possible to find how much of absenteeism in a given case is due to general causes and how much to special causes.

Similarly, the effects of different shifts and of an experimental change of shift hours on absenteeism have not yet been statistically examined. It may thus be put forward as tentative conclusion that the study of absenteeism and of the statistics referring to this problem are still in their infancy. An expansion of research in this direction might yield a rich harvest in human well-being, in industrial efficiency, and in the general atmosphere of industry.

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Books Received

"METROPOLITAN GOVERNMENT IN WESTERN AUSTRALIA" :

by J. R. H. Johns, M.A. :

Published by
The University of Western Australia Text Books Board,
Crawley, Western Australia.

78 pages. Price 5/6 (Australian Retail Price).

"THE FOUNDATIONS OF ECONOMICS" :

by Walter Eucken :

Published by
William Hodge & Co. Ltd., 86 Hatton Garden,
London, E.C.1.

358 pages. Price 21s. net.

THE HYDERABAD GOVERNMENT BULLETIN ON ECONOMIC AFFAIRS, October-December, 1949 and January-March, 1950 :

Issued by The Economic Adviser, Finance Department,
The Hyderabad State Government,
Hyderabad-Dn., India.

"THE WEALTH OF COLONIES" :

by Professor W. K. Hancock :

Published by
The Syndics of the Cambridge University Press,
Bentley House,
200 Euston Road, London, N.W.1.

81 pages. Price 7/6d. net.

Utility and All That[1]

I

These lectures are in the nature of an interim report by an idiot to his fellow-idiots; and I must therefore appeal to any non-idiot present to judge them with indulgence. By an idiot in this connection I mean one who has had no training in modern philosophy or in the higher mathematics, who is indeed easily fatigued by prolonged stretches even of simple algebra and geometry, and who therefore finds it difficult to follow the general drift, and impossible to follow the detail, of arguments couched largely in philosophical or mathematical terms. But I had better add that is only for a particular class of idiot that my report is intended, namely for those who, being professional students or teachers of economics, feel it incumbent on them to try to form some idea of what their fellow-practitioners are saying. To the idiot who is happily absorbed in the tasks of practical life, whether in making money or doing good or both, most of what I have to say will be of repellent aridity; and if any such has strayed inadvertently into this room, I hope he will feel free to slink quietly out through the door and back into the real world.

The subject of my report, though arid, is on the face of it of some importance. As though they had not enough to dispute about in the way of dollar shortages, employment policies and the like, economists, or rather some of the most gifted spirits among them, have continued in recent years to conduct a running debate on the more elemental, though by no means more elementary, topic of what sort of a study economics is, and what it is all about. This is a topic which, when I started to read economics at Cambridge in 1910, it was not, I think, fashionable among us to think much about—less fashionable, I dare say, than it may have been a few years

[1]Two lectures delivered in the University of Manchester on 7th and 8th December, 1950, and here reprinted substantially as delivered. In view of their obviously unoriginal nature and limited purpose, I have not attempted to give complete references. I am indebted to Mr. H. Houthakker for saving me from embalming some blunders in print; but I cannot of course claim his support for my general argument.—D.H.R.

previously, when the separate course in economics had not yet been extracted like Eve from the ribs of the Moral Sciences Tripos. To us, I think, it seemed a topic more suitable for discussion by Germans than by Englishmen. There was on our reading-list what I have since come to regard as a good, if dry, book about it, J. N. Keynes's *Scope and Method of Political Economy*, but to be quite honest I doubt if many of us read it. We thought we knew pretty well what sort of things we wanted to know about, and were glad enough to take the counsel given by Marshall himself near the beginning of the *Principles*,[1] "the less we concern ourselves with scholastic enquiries as to whether a certain consideration comes within the scope of economics the better," and to gallop on through the rest of those introductory chapters till we reached the relatively solid ground—or so it then seemed—of the theory of demand. But a little later something happened which enabled and compelled us to formulate our ideas a little more sharply—namely the birth in 1912 of the great work by Pigou which in its christening-clothes bore the name of *Wealth and Welfare*. Thenceforward we went armed with a picture of what we were supposed to be doing—a picture which I will now risk attempting to reproduce in outline.

Economics is, or aims at being, a science, concerned like other sciences with the organisation of knowledge of facts. Its ultimate subject matter is economic welfare, also called satisfaction, a thing which "can be brought under the category of greater or less." [2] In certain restricted situations we can measure satisfaction pretty well in terms of money : but on a larger canvas our measuring-rod breaks down,[3] and we have to be content to treat the stream of aggregate real income as an "objective counterpart" [4] or indicator of the positive elements of economic welfare. This, too, there are difficulties about measuring, but they are by no means fatal to the usefulness of the concept. Other things being unchanged, net economic

[1] p. 27.

[2] *Economics of Welfare*, 4th edition, p. 10.

[3] *Ibid.*, p. 57.

[4] *Ibid.*, p. 31.

welfare will be greater (*a*) the larger this stream of aggregate real income, (*b*) the more equally (to speak roughly) it is distributed among persons, (*c*) the more steadily it flows, (*d*) the less the aggregate dissatisfactions at the cost of which it is set in motion. About all these factors there is a great deal to be said, and not until it has been said do we reach the frontiers of economic science. But at this point it *does* become necessary to recall that economic welfare is only a part of welfare, and that a cause which promotes the former may damage the other parts of welfare. Nevertheless we may conclude that "when we have ascertained the effect of any cause on economic welfare, we may, unless, of course, there is specific evidence to the contrary, regard this effect as *probably* equivalent in direction, though not in magnitude, to the effect on total welfare."[1] Even so, the question remains open as to how, in the light of this conclusion, we ought to proceed in any particular case; to decide it we must bring in "as ultimate arbiters . . . our ethical instincts and our common sense."[2]

To that rough outline of what the whole business was supposed to be about I must add a rather more detailed account of the behaviour of the individual consumer as pictured in the Marshall-Pigou scheme, and of the concept of *consumer's surplus* which played so large a part in its prescriptions for policy; for it is largely round these things that later controversy has played.

We shall not go far wrong, so runs the theory, if we assume that the normal consumer, in disposing of his income, seeks to *maximise* something which we can call indifferently his satisfaction, his utility, or his economic welfare. He does this in the light of his knowledge of a law of the diminishing increments of utility to be gained from successive increments of expenditure in any one direction—a knowledge which assists him so to distribute his expenditure that the *marginal* utility of the several goods he purchases is proportional to their market prices.

[1] *Ibid.*, p. 20.

[2] Marshall, *Principles*, p. 28.

It is admitted that in particular cases, as a result of ignorance or misinformation, consumers do not get the amount of utility which they expected to get ; while in other cases, verging on the pathological, they do not desire things, nor therefore demand them, in strict proportion to the utility which they really expect to get from them. Again in some cases, such as their desire to get from door to door with dry feet, or to loiter on Sundays in the open air, it may be difficult or impossible for them to make their desires effective unless their consumption is organised on a communal basis. These phenomena have an important bearing on certain problems of policy, such as the control of advertising and the scope for municipal enterprise : but they should not be allowed to disrupt the fundamental tissue of our thought.

Now for the concept of consumer's surplus. The gain which accrues to a man from a fall in the price of one of his objects of purchase is regarded as being a real magnitude, in principle measurable, and measurable also in practice under certain restrictive assumptions. We cannot, I am afraid, do without a little—a very little—arithmetic. A man is found to be buying 8 lb. of tea a month—do not let us bother to be realistic—at 10/- a lb. His money income and all other prices remaining unchanged, the price of tea falls successively to 9/- and 8/-, and our man is found successively to be buying 9 lb. and 10 lb. per month. Marshall says he has enjoyed a net increase in satisfaction, and offers 17/- as an approximate measure of the increase, *viz.* 2/- on each of the lbs. he would have bought at 10/-, 1/- on the extra lb. he would have bought at 9/-, and nothing on the extra lb. he is just induced to buy as a result of the further fall to 8/-.

Further, if we have enough information, we can extend the argument to a comparison between the case when, tea being unavailable or prohibitively expensive, the man is buying none at all and the actual case when, as just supposed, he is buying 10 lb. a month at 8/- a lb. The money measure of his whole consumer's surplus on tea is thus the difference between what he *would* pay, if he were subjected to a bit by bit process of

blackmail, rather than go without tea altogether and what he actually *does* pay.

The admitted restriction on the validity of this procedure is as follows. The change between the two situations compared —whether both are situations of *some* tea or one is a situation of *no* tea—must not be such as to cause an appreciable change in the marginal utility of money income to the man concerned —otherwise our measuring-rod will be warped. This means, generally speaking, that in both situations the proportion of income spent on the thing in question must be relatively small ; and especially that we must not try to measure in money the utility of those elements of things of prime necessity which are required to support life. It also means that we must not try to add the money measures of consumer's surplus derived from different things so as to obtain a money measure of the aggregate consumer's surplus derived from a man's whole income.

The final picture, therefore, as regards the utility enjoyed by an individual consumer can be summed up[1] in four propositions :—

(1) Increments of utility derived from particular things, *i.e.* particular lines of expenditure, are both intrinsically measurable and practically measurable with the measuring-rod of money.

(2) Totals of utility derived from particular things are intrinsically measurable provided we measure them from a sensible starting-point, which is not in all cases that of zero supply.

(3) Totals of utility derived from particular things are also *practically* measurable on a certain assumption which can usually be sensibly made, namely that the proportion of income spent on them is relatively small : but

(4) The total of totals, *i.e.* the total utility of income in general, is not practically measurable at all.

[1]This summary is reproduced from my article in *Quarterly Journal of Economics*, February, 1950, p.6.

When we proceed from an individual to a whole market, there is the further difficulty that the marginal utility of money income differs between different people, partly because of differences in capacity for enjoyment, but partly, and more importantly, because of differences in wealth. Hence a comparison of the money measures of the total consumers' surplus derived, for instance, from beer and from champagne would be misleading, because our measuring-rod would be of different lengths in the two cases. But this is by no means fatal to all arguments based on the concept of consumers' surplus. In particular it does not touch the argument that where great economies can be reaped, at the expense so to speak of the devil, by producing something on a large scale, the increase in consumers' surplus generated by additional production may exceed the increase in financial cost, and justify the carrying on of the enterprise in question at a financial loss. This argument, which is obviously very relevant to the pricing policy of nationalised industries, but is equally obviously subject to many practical qualifications, is perhaps the most important use that has been made of the concept of consumers' surplus.

II

So much for what I will call the Cambridge set-up ; now for the torpedoes which have been launched against it. One concerns the economic welfare of the individual ; the other does not trouble us till we pass on to consider the economic welfare of whole groups such as a nation ; and my subsequent remarks will fall into two chapters accordingly.

Though no doubt they have an older history, both torpedoes arrived proximately from the same address—Lausanne, the home of Pareto. According to Pareto, we must face the possibility that utility—to stick for the present to that word—is stuff of such a kind that various lumps of it are capable indeed of being set out in an *order* of magnitude, but are inherently incapable of being expressed in precise quantitative terms, so that an enquiry about *how much* greater one lump of utility is than another has no meaning. If we accept this

suggestion, how much of the older proposition about consumer's behaviour is left intact? The answer given to this question in the mid-thirties by the pioneers of these studies in inter-war England, Messrs. Hicks and Allen, was as follows. The first limb of the proposition—that the consumer can be conceived as maximising his utility—can be allowed to stand ; for attaining a position which is higher up on one's hill of preference than any other position which is open to one can lawfully be described as maximisation, even if one cannot assign a magnitude to the height which has been reached. But the second limb of the proposition, which pictures the consumer as guided by a law of diminishing marginal utility, cannot stand ; for if utility has only ordinal magnitude, marginal utility is an illegitimate concept.

Let me run through the reason, for it is rather fundamental.[1] If we want merely to say that a situation A is rated more highly than a situation B we are not committed to any system of measurement. But if we want, and are able, to say that a movement from A to B is rated more highly than a movement from B to C, then we are back in the world of cardinal magnitude. For it will then always be possible to find a point B between A and C such that the move from A to B is rated *just as* highly as the move from B to C, and that is really the same thing as saying that the interval A—C is *twice* the interval A—B. So if we think we can compare not merely lumps of utility but *increments* of utility, we are committed to accepting the cardinal nature of utility ; *per contra*, if we decline to accept that, then we must not talk about marginal utility or its diminishingness. In realising this, Hicks and Allen achieved an advance in consistency over their master Pareto, who had continued to allow himself to talk about diminishing marginal utility.

But in slitting the throat of diminishing utility Hicks and Allen did not leave us destitute : they gave us in its place a creature which every teacher of economics now knows as the marginal rate of substitution. The consumer, it seems, must

[1]See Lange, O., *Review of Economic Studies*, Vol. I, p. 222, and Allen, R. G. D., *ibid.*, Vol. II, p. 156.

not go about burdened with the knowledge, or belief, that a little more beef or a little more beer would add so much to his satisfaction ; but he *may* go about with the knowledge, or belief, that he would be ready to go without so much beef for so much extra beer, and likewise for any other two commodities you like to name. The pattern of his behaviour thus emerges from the interplay of external events—his income and the system of market prices—with a complicated internal system of *indifference-classes*—that is, of classes of collections of goods such that between the members of each class he would find it impossible, if he were faced with the challenge, to effect a choice. If we are content to look at things in this way, which I confess seems to me much less plausible than the old way, we are mathematically safe from the reproach of having been beguiled, like poor Pareto, into measuring utility in our sleep.

In its earlier presentations the new theory carried a certain flavour of austerity—of having furnished economics with a protective armour against getting itself unduly tangled up with emotional and ethical questions. Nevertheless it remained a definitely psychological theory, "explaining" the consumer's behaviour in the sense of relating it to the working of his mind. In neither respect was the situation destined to remain stable. On the one hand, within a few years one of the protagonists, Dr. Hicks, was doing something which it is very difficult to distinguish from measuring utility in the manner of Marshall, though with added refinements ; and on the basis of his work there has been reared a "new" economics of welfare more ambitious in many respects than the old. On the other hand the logicians and behaviourists, having tasted the blood of cardinal utility, were spurred to fresh efforts of purgation, which have resulted in recent years in the development of the doctrine of "revealed preference." Dare I confess that when I first heard this term (some ten years behind the times) I thought that perhaps to some latter day saint, in some new Patmos off the coast of Massachusetts, the final solution of all these mysteries had been revealed in a new apocalypse ? But alas ! it does not mean that ; all it means is that we are to

construct an account of the consumer's behaviour simply by observing, or rather imagining ourselves to observe, all the acts of choice which he performs in the market, without making any assumption about what goes on in his mind when he makes them. I do not think complete agreement of expression has yet been achieved between the several exponents of this doctrine, and I can only hope that the brief account which I am going to give of it, while obviously inadequate, would not be repudiated as positively misleading.

A consumer is said to reveal a preference for a collection of goods A over a collection B if he is observed to buy A when, given his income and the system of prices with which he is faced, he *could* have bought B. It is impossible that if he thus reveals a preference for A over B he should also reveal a preference for B over A ; *i.e.* if in any circumstances he is found to buy B when A is available in the market, it must be because, with his then income and at the then system of prices, he could *not* have bought A. If in this sense he reveals a preference for A over B and for B over C, he is to be conceived of as revealing a preference for A over C, and it is impossible that he should reveal a preference for C over A ; this chain can be extended by any number of links. Finally, it is assumed[1] that there is no collection of available goods for which, in some situation in respect of income and prices, he will not reveal a preference over some other collection of goods. This last convention ensures, what is ensured in other formulations by the law of diminishing utility and the law of diminishing substitution, that the whole of income will not be spent on one sort of goods. With this set-up, so it is claimed, a consistent account of the consumer's behaviour can be given on the basis of nothing but observed, or potentially observable, market phenomena.

How much really has been thus achieved in the way of eliminating offensive psychological matter from the theory of consumer's behaviour? Here we have to notice what I will venture to call a difference of truculence between our two

[1]In the sense that we agree to confine our attention to situations of which this is true.

instructors, Professor Samuelson of Massachusetts and Mr. Little of Oxford. Let us first ask what has become of ordinal utility. At one time she seemed destined to follow her cardinal sister to the scaffold—Samuelson's original exposition was declared to be purged even of "vestigial traces of the utility concept";[1] but now she seems to have been re-enthroned—a pale and deodorised but still maximisable ghost. Little's attitude is more ambiguous, and for me hard to understand. Sometimes we are allowed to speak of utility, as long as we realise that the word is a mere noise, and carries no suggestion of satisfaction;[2] but elsewhere he claims to have definitely got rid of the consumer as a maximising individual,[3] so there seems to be no room left even for a noise. Surely there will have to be some re-thinking here; for, as I understand it, Mr. Houthakker of Amsterdam and Cambridge has now swept away such mathematical cobwebs as remained in the way of representing the consumer's behaviour, whether approached by the route of concealed indifference or of revealed preference, as a process of maximisation.[4]

And now what about *these* concepts—namely preference, and indifference or absence of preference? Here again Samuelson, whose vocabulary I have tried to follow, is the more conservative of our two guides: for the "preference" which has to wait for action to reveal it is clearly a state of mind. But Little is out for blood. Let us not say that a man reveals a preference for A over B, but that he "chooses" A rather than B—the word choose being tortured so that if a man reveals a preference for A over B, and in other circumstances reveals a preference for B over C, we say that he "chooses A rather than C" even though he is never in fact faced with making an election between them. Indifference proves a harder nut to crack. It is naturally a bugbear to the behavourist; for while we often catch people out performing an act of choice we do not often catch them out performing a

[1] *Economica*, February, 1938, p. 61.
[2] *Welfare Economics*, pp. 19, 30.
[3] *Ibid.*, pp. 24, 49.
[4] *Economica*, May, 1950, pp. 173-4.

prolonged act of failing to choose—"how long must a person dither" Little pertinently asks, "before he is pronounced indifferent?" So away with the word! Instead of a class of collections of things between the members of which, including *A*, a man would be unable to choose, we are left by Little with an abstract limiting line—a sort of 38th parallel—between those collections which will be chosen rather than *A* and those rather than which *A* will be chosen. It is a line which we can never reach, however near we approach it from either direction—the old Achilles-and-tortoise trouble. Yet somehow —and this is where I get lost—there will be concrete points on the line, and some of them will be definitely in North Korea and some in South. But the facts of the market will not reveal this; to be sure which is which, we must, apparently, after all ask the consumer which collection he would take if he were invited to choose one of them as a gift—or in other words which he would like best to have.[1]

Perhaps further light will be thrown on these subtleties in time. Meanwhile I must confess that two impious thoughts creep into the mind—if he has one—of the idiot who has got so far. First, the juice of mentality seems to be uncommonly hard to keep squeezed out—it *will* keep seeping back even into models of ever-increasing desiccation. Was it worth while to go to such mountainous trouble to formalise in non-mental terms the behaviour of beings whom we have every reason to suppose to be equipped with minds? Secondly—more impious still—that razor which we borrowed from old Occam to slit the throat of cardinal utility has had to be turned into a sickle to reap a very formidable harvest of difficulties; so might we not as well be hanged for a sheep as a lamb and restore cardinal utility to life? I shall have more to say about that later in other connections; but meanwhile, while indifference is fresh in our minds, let us listen for a moment to a patient voice, that of Mr. Armstrong of Southampton,[2] which has gone on assuring us for years that our difficulty with the troublesome concept of

[1] *Welfare Economics*, p. 22, n.1; p. 36, n.1.

[2] *Economic Journal*, September, 1939, p. 461: *Oxford Economic Papers*, January, 1950, p. 122.

indifference would vanish if only we could persuade ourselves to believe that utility is in principle cardinally measurable, though our faculties are not sufficiently acute to discern very small differences between amounts of it. Hence it comes about that we may feel indifferent between A and B and between B and C, but nevertheless definitely prefer A to C. Hence too it comes about that we may feel indifferent between A and B but nevertheless, since life must be lived, plump for A with no great difficulty or delay. On this way of thinking, trouble about connecting up price with marginal utility, in the old-fashioned sense, only arises if we expect the connection to be preternaturally close and accurate. Armstrong is not an easy writer for the idiot any more than Samuelson or Little, but I confess that when I read him I seem to feel a cool wind of common sense fanning my brow.

III

I must now say a little about the other, more conservative, wing of the Paretian revolt, led by Hicks. While rejecting cardinal utility, Hicks, by a surprising piece of mathematical expertise which I am ill-equipped to appraise, has nevertheless, in his own and a number of other people's estimation, managed to save the baby from being thrown out with the bath-water and, to use his own word, to rehabilitate Marshall's concept of consumer's surplus. He has indeed refined it in certain ways, of which I can give a sufficient idea by saying that in some cases it may be convenient to distinguish *two* measures of consumer's surplus, one—the smaller—representing (to take our old case) what the man would *give* to avoid being deprived of tea, the other—the larger—what he would *take* as compensation for being deprived of it. These refinements however are not very important—what *is* important is the claim that we can scrap the cardinality of utility and yet go on much as before; for on this claim, as I have already said, has been founded a large body of work, sometimes described as the "new welfare economics," applying the concept of consumers' surplus, often more boldly and baldly than I think Marshall himself would

have approved, to various problems of pricing policy, public investment, and the like.

I should add that of these claims to be able to measure the amount, as distinct from the direction, of changes in consumer's well-being the radical Paretian wing still seems to be extremely sceptical. Thus in an article written in 1943, Mr. R. L. Bishop of Massachusetts, no mean practitioner in these fields, concludes that, while "cardinal utilities add nothing to the mere description of human behaviour," they may nevertheless "provide useful generalisations for welfare economics which ordinal utilities have voluntarily declined to produce." [1] He illustrates this statement by alluding to Hicks's proof, using ordinal utility alone, that a tax on a particular commodity is more burdensome to the consumer than a direct tax yielding an equal amount, and adding that cardinal utility (he writes "consumer's surplus," but "cardinal utility" is imperatively required by the sense of the whole passage) would be needed to establish the *extent* of the extra burden. In another article,[2] written after some three years of further exposure to the keen winds of Massachusetts, Bishop refers back to this passage and says that he has changed his mind about the probable practical usefulness of cardinal utility analysis, which is described as giving "an exact measure . . . of improvement or deterioration in the consumer's position, where the ordinal analysis would indicate only the direction of change in his position." Now would Hicks or his many distinguished followers admit that, either in this particular matter of the comparison of direct and indirect taxation or in a dozen others, they had been content merely to indicate directions of change? Surely not. And what would Bishop call them if news were to reach his ears—as no doubt it has by now—of what they *are* doing? Surely we ought to know.

Perhaps we can guess by looking at another passage which also emanates from M.I.T. Professor Samuelson [3] does not like the tool of consumer's surplus; nothing, he says, can

[1] *Quarterly Journal of Economics*, May, 1943, p. 449.
[2] *Journal of Political Economy*, April, 1946, p. 152, n. 13.
[3] *Foundations of Economic Analysis*, pp. 196-7.

be done with it that cannot be done without it. But all the questions which he cites as illustrations of this contention seem to be "Yes or No" questions, among them that question whether an indirect tax is more burdensome than a direct one, and none of them "How much?" questions. Further, he alludes in a long footnote to a passage in which Hicks [1] uses his mechanisms to confirm the Marshallian proposition that "the loss which people would suffer from being deprived both of tea and coffee would be greater than the sum of their losses from being deprived of either alone,"[2] and stigmatises it as a "(misdirected) attempt to measure welfare in a cardinal sense." Never surely did one good ordinalist come nearer to denouncing another as an Edgeworthite cardinalistic deviationist!

Hicks's own account[3] of the relation of his own concepts to those of the older Utilitarians is worth quoting:

> "The most serious error in the old conception of consumer's surplus (how far Marshall shared this error I shall not presume to discuss) lay in treating it as an absolute magnitude, in making statements such as that a consumer, just because he is in such and such a position, is getting so and so much consumer's surplus. The newer conception is quite different from this. Consumers' surplus is relative, not absolute. We are always considering the *movement* from one defined situation to another defined situation; we are asking what is the gain (or loss) of money income which would measure the gain (or loss) of economic welfare resulting from the movement."

Now I am myself disposed to argue that the alleged "error" was not an error—that one can be said to be deriving an absolute net benefit from one's conjuncture even if one is not continuously reciting one's blessings, just as one can be said to know that $2 \times 2 = 4$ even though one is not continually reciting the multiplication table. Charles Lamb said that he felt disposed to say grace upon twenty other occasions in the

[1] *Review of Economic Studies*, Vol. IX, pp. 136-7.
[2] *Principles*, p. 131, n. 1.
[3] *Review of Economic Studies*, Vol. XI, p. 41.

course of the day besides his dinner, and I find myself doing something of the kind every time I enter the Great Court of Trinity. No doubt I ought, no doubt we all ought, to do it oftener ; but to say that one does not get a net benefit from a fountain pen or a friendship because one is apt not to be fully conscious of the benefit till one has lost it seems to me misleading. But that is not quite the point at the moment. Is this difference of attitude which Hicks detects between himself and (let us say) Edgeworth really resolvable into terms of ordinality and cardinality? If so, we seem to be landed with something of a paradox. For ordinality was supposed to enable us to compare absolute positions and cardinality to be required to enable us to compare changes in position. Yet here is Hicks ascribing to the cardinalists an excessive and illusory concern with absolute positions, while he, the ordinalist, is concerned with measuring, that is comparing the size of, changes in position. Whatever the bottom of this matter is, I do not feel that this interesting passage of Hicks has conducted us to it.

What *is* the bottom of it? Are we still, in spite of all the ink that has been spilt, in what Samuelson has called a "semantic snarl?" If so, I do not think it is the fault of the cardinalists. In the persons of Frank Knight and W. E. Armstrong they have made, I think, as clear as it can be made the distinction between what the former calls "quantification" and actual "measurement," [1]—between what I have called—attributing, rightly or wrongly, the distinction to Marshall—a thing being in principle or intrinsically measurable and its being measurable in practice.[2] The fact that we know that our measuring-rods are imperfect and in some cases break down altogether does not, says Armstrong,[3] imply the immeasurability of what is measured but the precise opposite ; if we claimed infallibility for our rods, that *would* be tantamount to implying that the measurability of the object has no real existence and is only created by the act of measurement. But

[1] *Journal of Political Economy*, December, 1944, p. 303.
[2] *Quarterly Journal of Economics*, February, 1950, p. 6.
[3] *Economic Journal*, September, 1939, p. 466.

what is Hicks doing, providing us with measures of the inherently immeasurable? It is not possible that Quantification has seeped back into the workshop of the ordinalists, rather as Utility itself has seeped back into the workshop of the behaviourists, and that it is only against claims to miraculous powers of exact measurement—claims that have never in fact been made—that they are really intending to take up arms?

For the stupidity, ignorance and impertinence displayed in a suggestion which I lightly made to this effect in my address[1] to the Royal Economic Society in 1949, I have been, as I expected, smartly though gracefully rapped by Samuelson over the knuckles.[2] But I am quite prepared to suffer the same fate again in the interests of clarification; and I do suggest in all seriousness that the next essay in this art is due from some quarter or other of the ordinalist front.

IV

You will be weary by now of this cardinal-ordinal theme; but it is my duty as reporter not to leave it without mention of two further contributions to the debate. I have already hinted my agreement with Knight that it seems much more in accordance with what we know of our own minds to suppose that the consumer has direct experience of the diminishing utility of particular things, and proceeds from this basis to work out when necessary his marginal rates of substitution, than to suppose that his primary experience is of a complicated network of ratios. But what of this argument used by Knight[3] in support of his position—that only thus can we explain how the consumer ever comes, when his money income increases or other prices fall, to add a *new* commodity to his shopping list instead of buying increased quantities of the old ones! It turns out that he has phrased the argument incautiously; for Mr. Bishop, in a long mathematical reply,[4] is able to devise queer cases in which *increasing* marginal utility from an old

[1] *Economic Journal*, December, 1949, p. 505.
[2] *Economica*, November, 1950, p. 375.
[3] *Journal of Political Economy*, December, 1944, p. 297.
[4] *Journal of Political Economy*, April, 1946.

commodity—say bread—is compatible with the introduction of a new one—say butter—whose merit lies in its power of enhancing the attractiveness of the old one. But Knight's interest was not in queer cases, but in the question of what is the most satisfying interpretation of the straightforward case. And here he seems to me to be right. If, when my income increases, I decide to add champagne to my diet, the cause of my action is surely inadequately, even though not incorrectly, described by saying that there has been a change in my marginal rate of substitution between champagne and other things. For in the straightforward case nothing has happened on the side of the champagne, hitherto a stranger to my home, to account for the change. The cause of change must lie on the side of the other things, *i.e.* in the diminution of their marginal utility. Why not say so?

The other argument for cardinality which I must mention turns on the fact that choice is often made between actions whose consequences are uncertain. It is fortunate that I have left myself so little time to report on this topic, for it is one in which the disputants very quickly soar out of my reach; but I must not shirk it altogether.

Suppose a man prefers A to B and B to C and has to choose between taking B and taking an even chance of getting A or C. Somehow or other such choices are made, and we have no right to say they are irrational. But the man has no basis for a rational choice unless he is forming some estimate of the relative strengths of his preference for A over B and his preference for B over C. If the former is strong and the latter is weak, that is a force tending to make him choose the even chance rather than the certainty, and conversely. But if he can thus compare intervals of preferredness—the relative lengths, so to speak, of the lines AB and BC—that means, as we have seen, that utility is in principle measurable.

Put thus, as it has been in recent times by Armstrong,[1] the argument surely appeals strongly to common sense. But we must not suppose it to say more than it does. Supposing, for instance, in this case of an even chance, our man judges

[1] *Economic Journal*, March, 1948, p. 3.

AB to be equal to BC, it does not at all follow that he will be in any doubt how to act. If he hates uncertainty, he will choose B, and if he revels in it he will choose the even chance.

That is why those eminent writers, Messrs. Neumann and Morgenstern—the bulk of whose work is far outside my comprehension—seem to me to have done as much harm as good to the cause to which they have lent their distinguished aid. For they have proposed to derive an actual measure of utility from the degree of uncertainty faced.[1] Thus in the case of a man who does not know how to choose—*i.e.* who chooses by the toss of a mental coin—between the certainty of B and an even chance of A or C, these authors offer 1 as a measure of the ratio of AB to BC ; if the chance were 2 to 1 in favour of A, the measure would become $\frac{1}{2}$, if 3 to 1 *against* A it would become 3, and so forth. But it is clear that this would only be true for a particular type of man, namely, one who is content to be governed entirely by mathematical expectations ; if there be such a thing as an average man, it would seem that a not implausible thing to say about him would be that in his business life he requires to be paid for taking an even chance, while in his leisure he is often prepared to pay something for doing so. This, however, as it seems to me, does not alter the fact that we can make no sense of his actions in the face of uncertainty without supposing that he can form some estimate of the relative difference in desirability between pairs of situations. And I should suppose that this conclusion would remain even if we feel constrained to devise more subtle conceptions of uncertainty than those crude "even chances" and "x to ones" which you may have been shocked to hear me employing.

V

And now to conclude my Chapter I. One must not assume that because a vegetarian has taken to meat-eating he will therefore ever go all the way back to cannibalism. But I like to play with the idea that in the fullness of time some at least of those "new welfare economists" who are now so careful to insert the word "ordinal" whenever they use the word "utility"

[1] *Theory of Games and Economic Behavior*, 2nd ed., pp. 15-31.

will be found quietly dropping it. Or will the semantic snarl perhaps be resolved by a semantic dodge? Will someone perhaps announce the face-saving discovery that all along the word "ordinal" has carried the connotation not only of being ordered but of being ordered in an orderly manner, *i.e.* with divisible spaces between any two ordered points?

VI

So far we have been concerned with problems of the individual consumer. Now, by way of transition to the problems of the group, I want to linger a moment over the alternative expressions—utility, satisfaction, economic welfare —which have been propounded and used for the thing conceived to be maximised. Utility is the most firmly entrenched of the three, which is perhaps a pity; for it is really one more fitted to describe the quality in objective goods and services which enables them to produce certain sensations than to describe the sensations themselves. Satisfaction is to my mind the least unsatisfactory of the words, in spite of a certain unfortunate suggestion of smugness—of the rubbing of hands or the folding of them over well-lined bellies. But I must devote special attention to the third member of the triad, economic welfare, for it seems to me to have been responsible for misunderstanding. I would fully agree that one cannot discuss a man's total welfare without getting mixed up with ethics and making what the philosophers call value judgments. But I cannot see that the same is true about that "more material side of human happiness," to use sensible old Edwin Cannan's phrase, which we call economic welfare. Little, the iconoclast, is perhaps justified in complaining [1] that too many writers say welfare when they mean economic welfare; but some take the trouble not to, and I cannot see that there is any justification for smelling ethics in any composite word or collection of words containing the syllable "good" or "well," whether applied to individuals or to groups. Little's nose, I do believe, is too keen; one feels that in some moods he would smell propaganda, Malthusian or the reverse, in the

[1] *Op. cit.*, p. 79.

multiplication table, and detect a strong emotive or persuasive flavour about such terms as the solar *system* or the *new* stone age. Perhaps it would have been better—it would certainly have been in full consonance with its doctrine—if Pigou had called his great book "A Study of Economic Welfare" instead of "The Economics of Welfare." Anyway, partly for brevity and partly in the hope of craftily dispelling the notion that the phrase "economic welfare" is bulging with ethics and emotiveness, I shall in what follows take leave to substitute for it the portmanteau word "Ecfare." For the same reason I shall deny myself the use of those convenient phrases "better off" and "worse off" which generally figure so largely in these debates.

VII

We are now ready to attend to the second half of the bombshell which was launched by Pareto and his followers against the framework of thought which I described at the beginning of my first lecture. If the ecfare enjoyed by an individual is not in principle measurable, so the contention runs, still less is it possible to form comparative judgments about the ecfare enjoyed by different persons, or to add such elements of ecfare together or subtract one from another. If this contention be accepted, a somewhat searching question at once arises. Can we never say that the general ecfare of a group, say a nation, is greater in situation A than in situation B except in those cases where *somebody's* ecfare is greater at A than at B and *nobody's* is less? Even if this were true, the economist's occupation would not be altogether gone. There seem to be *some* problems which could be comfortably discussed on this basis. But there are undoubtedly many which would have to be ruled out.

The attempts which have been made by the New Welfare Economists to give a more encouraging answer have largely been framed in the language of index-numbers, which is delightsome perhaps to the eye but impossible to the ear, so that I must attempt my bald summary without its aid. And I must warn you that I shall start by giving my summary in terms which might be repudiated by all parties as unfair.

Some ten years ago Mr. Kaldor suggested that, if there has occurred a structural economic change from *B* to *A*, say the imposition or removal of a tariff, then general ecfare can truthfully be said to have been increased if it turns out that those whose ecfare has been increased by the change could compensate in money those whose ecfare has been diminished, and still find their own ecfare increased. This suggestion, which was declared to be clean of inter-personal comparisons of ecfare, won a good deal of assent till it was pointed out by Prof. Scitovsky that the distribution of income might be so altered by the change from *B* to *A* that it would now be possible, if the change back to *B* were made, for those whose ecfare would be increased by this reverse change to compensate those whose ecfare would be diminished, and still find their own ecfare increased. In this case we should have to say that general ecfare was both greater at *A* than at *B* and greater at *B* than at *A*, which does not seem a very sensible thing to say. To meet this difficulty the criterion was given a double head. In order to say that a structural change from *B* to *A* will increase general ecfare, we must be able to show, to put it crudely, both (i) that it would be possible for those who would gain by the change to bribe those who would lose by it not to oppose it, and (ii) that it would *not* be possible for those who would lose by the change to bribe those who would gain by it not to insist on it. The second head of this criterion was afterwards found to be identical with one which Hicks, who in words had backed the unamended Kaldor criterion, had himself propounded, in the sweet language of index-numbers, as an all-sufficient criterion. That, however, is just a little extra complication in the path of the plain man who is trying to piece this story together. The main point is that, thus reinforced, the "compensation" criterion of an increase in general ecfare once more seemed secure.

But *was* it secure? The plain man's difficulty with it is that it seems to make what *does* happen to general ecfare depend on what *might* happen, but doesn't, and very likely for practical reasons couldn't, in the way of compensation. And in due course that instinctive objection has been skilfully

formulated by the big guns. Even if both criteria were fulfilled, says Little, all that has happened is that there has been a *potential* increase in general ecfare ; to make up our minds whether there has been an *actual* increase we must import an outside judgment of an ethical kind as to whether the new distribution of income is better or worse than the old. I shall discuss presently whether such judgments about distribution *are* necessarily of an ethical kind ; but meanwhile we can agree with Little that it is easy to think of cases where almost everybody's judgment, however formed, would pronounce the change in distribution which has actually occurred between B and A to be so inimical to general ecfare as to make it impossible to say that general ecfare is greater at A, however large the hypothetical compensation-fund which has been churned out by the change.

What then is Little's criterion for general ecfare being greater at A than at B ? His first requisite is that distribution should be adjudged to be no worse at A than at B ; his second is our old friend the Scitovsky requisite, namely that it would not be possible for those who would lose by the change from B to A to bribe those who would gain by it not to insist on it ; which again means that no mere redistribution of the B income would make each person's ecfare as great as it will be at A if the change is made. Provided these two criteria are fulfilled, the Kaldor criterion may remain unfulfilled. It does not matter if those who have gained by the change—say a couple of impecunious saints—could not, without sacrificing all their gains, conpensate the losers—say a couple of bloated spivs—if no-one would suggest their doing so even if they could.

But, says Little, if his two criteria are *not* fulfilled, the Kaldor criterion will be fulfilled in vain. It may be that at A the gainers from the change—this time a couple of bloated spivs—could afford to compensate the losers—a couple of impecunious saints ; but that is no consolation if they are not compelled to do so. Or again it may be—please attend carefully to this one—that the gainers—this time once more a couple of impecunious saints—could afford to compensate the

losers—a couple of bloated spivs—but that by monkeying about with the distribution of income at *B* we could have made the ecfare of each person, saint and spiv alike, greater than it is now that we have made the change to *A*. In this case, general ecfare was really greater at *B*.

Now for the other big gun, Samuelson. His general line of attack [1] is the same as Little's, but he presses it even further home. All that the Scitovsky criterion tells us, he says, is that there is no redistribution of the *B* income which could give each person as much ecfare as he has at *A* ; and all that the Kaldor criterion tells us is that there is no redistribution of the *A* income which would give each person as little ecfare as he had at *B*. But there may still be plenty of ways of redistributing the *B* income which would give *some* persons more ecfare than any way of redistributing the *A* income could give them ; and these may be persons to whose ecfare we attach particular importance. Only, he concludes, if this is not the case, *i.e.* only if there is nobody whose ecfare could be increased by *some* redistribution of the *B* income more than it could by *any* redistribution of the *A* income, has *A* the right to be dubbed unconditionally a point of greater general ecfare than *B*. Otherwise its right to be so considered is conditional on the importation from outside of some value judgment about what distribution of the flow of goods available at each of the two points is appropriate. Moreover even in cases where the unconditional right of *A* to be dubbed superior seems to be established, it vanishes again as soon as we assume the flows at *A* and *B* respectively to be not merely re-distributable between persons but alterable in their composition by a re-allocation of productive factors between different uses. As though all this were not enough, the Samuelson gun has still one more round in its magazine ; but in mercy let us hold it back for the moment, for surely the whole Hicks-Kaldor-Scitovsky line, and the whole citadel of the New Welfare Economics which it protects, lies in ruins. Or doesn't it ?

At this point I must remind you of my warning that I should couch my account of this battle in terms which all

[1] *Oxford Economic Papers*, January, 1950, pp. 1-29.

parties to it might repudiate. I had to do that in order to make sure that after all the parties had put on their saucepans and coal-scuttles, like Tweedledum and Tweedledee, there really would *be* a battle. To ensure that, I had to make all parties describe their winning point as a point of greater general ecfare. I don't think Samuelson can have much grievance against me for this, though I expect he would rather I had said *higher* general ecfare. But it was not quite fair to Little. You remember that case where distribution would be improved by a structural change from B to A and where the gaining saints would be able to afford to compensate the losing spivs (though they wouldn't be asked to do so), but where by monkeying about with the distribution of the B income we could make the ecfare of each person greater than we could by moving to A. Well, Little does not actually say that general ecfare would be greater at B than at A. He says something in a way milder and in a way more extreme—he says he does not recommend us to make the change from B to A. He feels free to say this because, being young and bold, he also feels free to recommend us instead actually to make the indicated redistribution of the B income.

But now, having made amends to the Tweedledums, I must try, like Alice, to be fair to the Tweedledees—and this is more than I feel sure the Tweedledums have been. For both the Tweedledums, to wit Little and Samuelson, have charged the Tweedledees with proposing criteria, which turn out to be fallacious, for recognising an increase in general ecfare ; and it would need a minute study of texts to be sure quite how far this charge is deserved. As a matter of fact, especially when discoursing in the harsh music of index-numbers rather than in the dulcet strains of consumer's surplus, the accused persons have been more apt to talk in terms of an increase not of general ecfare but of "real social income" ; and I think it is arguable that some of them at least, including Kaldor,[1] knew as well as their critics that what they were discussing was the recognition and measurement of *potential* rather than *actual* increases of general ecfare. No doubt some of their disciples have been

[1] *Review of Economic Studies*, 1946-7, p. 49.

more imprudent, such as Professor Myint, who is, I think, rightly pilloried by Little [1] for claiming that "modern economists have now developed a method of "compensation" by which it is possible to find out *whether society as a whole is better off or worse off by a given change* even if this change involved changes in the distribution of income." That certainly is pitching it much too high.

I am tempted to suggest that the difference between the parties is partly one of optimism, or rather one of the direction in which optimism is brought to bear. Little, as we have just seen, bases one of his recommendations on the assumption that we are free to make a cold-blooded redistribution of existing income as an alternative to permitting a structural change. Hicks on the other hand once went so far as to argue that if we make all changes which are justified on grounds of efficiency, *i.e.* which increase general *potential* ecfare, any damage to the ecfare of particular persons can be pretty well trusted to right itself in time.[2] Little pours a cold douche on this particular brand of optimism by one of his cheery reminders that particular persons are apt to die, so that to weigh their losses against the gains of the unborn involves making precisely those obnoxious inter-personal comparisons of ecfare which it is the object of all these exercises to avoid. But he is compelled in candour to turn a little trickle of water on his own brand of optimism by an admission [3] that those out-of-the-blue monkeyings with the distribution of existing income which play such a large part in his and Samuelson's reasonings cannot be relied upon to be easy or innocuous procedures.

Partly, however, the issue seems to turn on a more technical matter, namely whether there is anything left of the old distinction between an increase in the general or social real income and an increase in general ecfare, or whether it is rather true that those who talk about the former must be held, whether they like it or not, to be really talking about the latter. Now at least one difference between the concepts clearly

[1] *Op. cit.*, p. 95. My italics.
[2] *Review of Economic Studies*, 1940-1, p. 111.
[3] *Op. cit.*, p. 107.

remains. Difficult as it may be to decide exactly what to knock off in order to arrive at the concept of *net* social income, it is surely convenient to stop short of knocking off everything in the way of toil and trouble that goes towards the out-turn of goods and services ; at the worst an increase in real social income is to be identified with an increase in the *positive components* of general ecfare. But is it really to be identified even with that ?

Let us refresh our memory of Pigou's treatment of this matter. Premising that we should "naturally wish" to find an objective measure of a change in the size of anything so objective as a flow of goods and services, he is nevertheless driven to define the criterion of changes in the size of the flow in terms of the relative *utilities* of those items which have been added to the flow and those which have been taken from it. Since what he really wanted was an objective measure, it is perhaps a little odd that, when he comes to measuring, he should express regret at being driven back, by the imperfection of his measuring-rod, from the subjective heights of utility to the much more objective plane of quantities bought and prices paid. But that is a secondary point ; the primary one is that by assuming the distribution of purchasing power to remain unchanged while he conducts his measurements, he seems to manage to keep a change in the size of the real social income and a change in its distribution as formally separate phenomena, mutually interacting to *cause* a change in general ecfare, but not so closely interlocked as jointly to *constitute* such a change. Now is this an illegitimate use of the *ceteris paribus* device ? Once utility has crept into our criterion of changes in the size of real social income, does it become impossible to talk about the latter without taking into account that if the constitution of real social income changes the utilities enjoyed by different people are likely to be affected in different ways ? That is what Samuelson seems to imply when he condemns attempts to divide the problem into two parts as getting us into a "semantic snarl." [1] Yet in his detailed critique of Pigou all that he has shown, so far as I can see, is that for the latter to

[1] *Oxford Economic Papers*, January, 1950, p. 12.

be able to infer directly an increase in general ecfare from an increase in real social income as defined by him, the ecfare of every individual must have increased.[1] But, again so far as I can see, Pigou does not attempt to infer directly an increase of general ecfare from an increase in real social income without regard to what has happened to distribution, though there is only one sort of change in distribution, namely a change as between "the rich" in general and "the poor" in general, that he regards as sufficiently interesting to discuss. And I should have thought that at any rate the more cautious members of the "new welfare" brigade might be able to put up a somewhat similar defence for their procedures.

Once more I present myself as a mere rapporteur and not as a judge. But if I may now give in vague terms my provisional impression about the state of this whole debate, I should say that the assailants, Samuelson and Little, have made some shrewd hits and pricked some unwise and presumptuous pretensions. But I should say too that in their preoccupation with distributional considerations they might on occasions, if we followed their advice, be causing us to let the best be the enemy of the good ; while the defenders, Hicks and Co., in their dichotomy between the size of the real social income and its distribution and their primacy of emphasis on the former, have got hold of something solid and sensible which they may find it difficult to tidy up but which it would be regrettable if they were to abandon. For it enshrines a basic truth which any group, and especially a national group in an acutely competitive world, will neglect at its peril.

VIII

I must now, however, go on to let my King Charles's head appear by suggesting that both parties have made everything more difficult than it need be, both for themselves and for us, by their resolve to preserve at all costs the ordinal nature of utility. But here we must distinguish between the case of Little and that of all the others on both sides. These all, so far as I can make out, hold themselves bound by the Paretian

[1] *Ibid.*, p. 28.

dogma that one must not attempt to compare the ecfare enjoyed by different individuals. I am never quite sure whether one must not try to do this because it is impossible, and attempting the impossible is a wicked waste of time ; or because, while perfectly possible, the process is held to involve making judgments about what is nice or nasty, and not simply about what is true or untrue. But anyway it is considered naughty, and you must not do it. Instead—here I pass on to you Samuelson's prescription—you must introduce from outside a vast umbrella called a Bergson social welfare function[1] which will tell you, among many other things, whether or not to do something which will increase *A's* ecfare and diminish *B's*, without any need for you to bother your head whether the increase in *A's* ecfare is greater or less than the diminution in *B's*.

Little is in quite a different case. Like the original Tweedle brothers, when he gets really excited he is somewhat prone to hit everything he can see, and indeed everything within reach, whether he can see it or not ;[2] indeed sometimes to the enthralled onlooker he appears even to land some shrewd blows on his own saucepan. Anyway he starts by making refreshingly short work of the Paretian shibboleth. We do, he says, constantly make comparisons between the "satisfaction, happiness, real income or welfare" of different persons, and such comparisons "are not in any normal context value judgments,"[3] but judgments of fact, though they may be rough and ready ones. It is only when we go on from comparing individual cases to making statements about society as a whole that Little begins—needlessly, as I have suggested—to smell ethical and emotive brimstone. I wish there were time to take you through his intricate exposition. I should like too to break a lance with him on his contention that "happiness" is a more positive and less emotive concept than "economic welfare"—for I will not let him fudge the issue by quietly dropping the word "economic" when it suits him to do so.

[1]For which see Bergson (Burk) in *Quarterly Journal of Economics*, February, 1938, pp. 310 ff.

[2]*Through the Looking Glass*, p. 81.

[3]*Welfare Economics*, p. 73.

I should have said myself precisely the opposite—that other people's ecfare is much easier to assess confidently than their happiness, and judgments about what will promote it much easier to keep on an objective plane. But I must concentrate on my main trouble, which is this.

I do not see how Little manages to make his inter-personal comparisons unless he is equipped with a knowledge of the law of diminishing utility of real income in the case of the individual. I do not mean that to make plausible comparisons in individual cases he will need nothing else ; he will need also to be able to form a shrewd idea of the several persons' capacities for enjoyment. But without the knowledge of such a law I do not see how he can begin to operate. Now how does he manage, if he *does* manage, to consider himself as being equipped with knowledge of such a law of diminishing utility—knowledge which involves the power to estimate, however roughly, differences between *increments* of utility—since he has thrown cardinal utility out of the window? It is precisely because I agree with Little that we *do* want to, and believe that we can, make such inter-personal comparisons, and draw inferences from them about such important matters as taxation policy, that I find the claim of the Paretians to have proved the *redundancy* of the concept of cardinal utility so irritating! I don't mind being told it is false—we can proceed to argue about that. But when I am told that I can go on believing it if I like, but that it will not enable me to say or do anything which I couldn't say or do equally well without it, then I find it very hard not to get cross! For that seems to me quite patently not the case.

Little then, though in intention the most destructive of all our writers, is to my mind the nearest to a state of grace. I wonder whether, once he has fully realised that all his behaviourism hasn't saved him from being concerned with a problem of maximisation, he will not in the end slip back quietly into the cardinal fold. He would be much happier there than he ever will be under the many-coloured umbrella of a Bergson social welfare function! And if, by persuading Hicks that he, too, has been guilty of making inter-personal

comparisons, if only between the born and unborn, Little can compel him, too, to admit that he has qualified for membership of the Cardinal Club, so much the better.

Let us suppose—just you and I, there is nobody else listening—that we are *all* back in the Cardinal Club, *i.e.* in the Pigouvian world of measurable utility from which we set out to explore the subtleties of modern doctrine. What would that mean? Not, I think, that our problems would become much easier in practice; but surely that we could arrange our thoughts about them in less complicated ways than those which are now in fashion. Armed with the law of diminishing utility we could carry our reasoning on a purely economic basis a good deal further than we are now allowed to do, before finding it necessary to call in priest or prophet to help us. We should not longer find ourselves unable, like the poor White Queen, to do subtraction under any circumstances;[1] nor disposed, I think, to resist the *prima facie* case for holding that, given time to ease painful transitions, something not far short of complete equality of distribution would generate the maximum of immediate ecfare that could be distilled from an unchanged volume of productive resources.

But of course all the real problems would still lie ahead. Some of them could still be properly stated in predominantly economic terms—above all that crucial problem, in all its many forms, of the Maintenance of Incentive. For general ecfare has a time dimension; and to generate one glorious transitory flare of it by a spectacular process of redistribution would be singularly little use. No easy agreement can be expected as to what degrees of inequality are serviceable towards the maintenance of general ecfare in a steady and gradually expanding stream; but there is no difficulty, I think, about *stating* the problem in terms of the utilitarian calculus—let us have a little less general ecfare than *might* be reaped to-day in order that there may not be a great deal less, but may rather be more, tomorrow and the day after and the day after that. If Samuelson likes to express the same point—this was the last round from his gun which I deferred telling

[1] *Op. cit.*, p. 174.

you about—by saying that the hyper-surface of a utility-feasibility function will lie inside that of the corresponding utility-possibility function,[1] well, that is just fine ; we all have our funny little ways of putting things.

In my presidential address last year to the Royal Economic Society I suggested—and I do not recant—that it is the primary business of the economist to move on the economic plane as thus conceived, and that there is plenty for him to do there. But of course if we want to be statesmen, at however humble a level, then in the end we must send for the prophet and the priest, or conjure them up out of our own insides. Then in our journey in search of right action we shall meet Justice on the road ; but he will not always wear the same face. To give but one illustration, in one of his guises he may conspire with Immediate Ecfare to demand that the differentials between skilled and unskilled wages be reduced, and in another with Ultimate Ecfare to demand that they be preserved or even increased. We shall meet Charity, but she, too, will not always tell the same tale ; sometimes she will plead urgently for a redistributive slide along one of Samuelson's utility-possibility curves ; but sometimes, under her finer name of Love, she will be heard bidding us pay heed to the possible effects on character of life in the Superecfare State, where everything is to be had by everybody for nothing. We shall meet, too, a queer personage for whom I cannot find a name, but who seems to be a poet rather than either an economist or a priest, and who will express to us his misgivings lest the colour of life and the richness and variety of human personality should not survive too rigorous an assimilation of economic circumstance. And all the time as we journey, we of this epoch seem doomed to hear, above the clatter of the fraternal duellings of the scholarly Tweedledums and Tweedledees, the beating of the wings of the monstrous crow of War, forcing us, in our statistical calculations and in our policies, to treat Power and Preparedness *as if* they were ecfare, though we know full well that they are not.

[1] *Oxford Economic Papers*, June, 1950, p. 18.

In picking our way through this labyrinth some of us may be able to find illumination in the thought of an all-embracing Social Welfare Function, whose maximisation would indicate that all our decisions have been those which the Archangel Gabriel, or perhaps only those which Uncle Joe Stalin, would have made in our place. It may be that, having pleaded for more explicit quantification of those parts of welfare which seem to me to be inherently quantifiable, I am inconsistent as well as churlish in the allergia which I feel towards this vast parti-coloured mathematical balloon, and in my consequent reluctance to divide the history of thought, as I feel Samuelson would like me to, into the pre-Bergson and the post-Bergson age. But when we reach these regions of ultimate decision, I find it difficult to believe that mathematics has much to say that is not said more briefly in that aspiration of the Book of Common Prayer—that we may have a right judgment in all things.

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Economic Opinion in England as Jevons Found It

I

There is a considerable body of evidence that English economic thought in the two decades before the publication of Jevons' *Theory of Political Economy* in 1871 had made very little progress. If this was the case, the question arises, why was it so? Behind this particular historical problem there lies the more general one which it may help to illuminate: what are some of the conditions that may stultify economic thinking?

II

Contemporary opinion in the third quarter of the century tended strongly to the view that political economy in England seemed incapable of further substantial advance. Henry Sidgwick described the complacency of the period: "Both the theory of Political Economy in its main outlines, and the most important practical applications of it, were considered as finally settled by the great majority of educated persons in England."[1] The *Quarterly Review* wrote of the "stagnant pool of English economics."[2] In his Inaugural Lecture in London in 1870, Cairnes ruefully observed of his subject, "it is not denied that the science has done some good, only it is thought that its task is pretty well fulfilled."[3] Bagehot was of the same opinion. "Our political economy is not altogether satisfactory," he wrote, "It lies rather dead in the public mind. Younger men do not study it, or do not feel that it comes home to them, and that it matches their most living ideas."[4]

[1] *The Principles of Political Economy*, London, 1887, p. 1.

[2] July, 1877, p. 108.

[3] *Essays on Political Economy*, London, 1873, p. 240. "I seem to observe in the literature and social discussions of the day, signs of a belief that Political Economy has ceased to be a fruitful speculation (*ibid.*, p. 238).

[4] *Fortnightly Review*, 1st February, 1876, p. 216. Quoted by Jevons, *ibid.*, 1st November, 1876, p. 619. For further expressions of misgiving, *vide*: William Hearn, Plutology, Melbourne, 1864, p. 3. William Lucas Sargant, *Recent Political Economy*, London, 1867, p. iv. Robert Lowe, *Nineteenth Century*, November, 1878, p. 868. Archdeacon Cunningham, *Mind*, July, 1878, p. 369. "Some of the newspapers," wrote Jevons, "hinted in reference to the centenary dinner that the political economists had better be celebrating the obsequies of their science than its jubilee."

It may be that some of the contemporary comments had an emotional content, or confused the question of the public interest in the subject with the degree of theoretical progress. But the literature of the period supports the contemporary verdict of arrested development. By the mid-century, or shortly after, the leading components of neo-classicism were available. The utility concept, marginalism, the generalised laws of return and of rent, the abstinence theory of capital, Rae's discussion of the role of innovation, along with a number of refutations of Say's Law, and a breaching of the Ricardian theory of long-run development, all were waiting to be worked into a new system. For nearly two decades English political economy stood semi-derelict, in the midst of the materials of reconstruction. Not even the resounding collapse of the Wages Fund with Mill's celebrated recantation of 1869 led to a reconsideration of the general structure : as Keynes has complained,[1] the fundamental questions left by the deletion remained unanswered.

It must not of course be inferred from all this that no real economic thinking was being done. Bagehot flourished in these years. But his most valuable contributions were so close to the outlook of the practical men as to be considered more akin to the world of business than to that of theoretical economics. Nor did he effectively challenge his contemporaries to remake the old system in the light of the problems of instability with which he dealt. There were also the earlier inquiries of Jevons into fluctuations, prices, the money market, coal, and his preliminary statement of his theory of value in 1862. Cairnes, too, had discussed the gold discoveries and the economic roots of the American Civil War. William Newmarsh[2] in fact regarded the late 'sixties and early 'seventies as periods of progress, because in them political economy had become, "like every other subject of intellectual pursuit of our time, a science of observations, experience, fact, and induction." He adduced the works of Buckle, Thorold

[1] *The General Theory of Employment, Interest, and Money.* London, 1936, p. 364.

[2] *Transactions of the National Association for the Promotion of Social Science,* 1871, p. 109.

Rogers, Leone Levi, Dudley Baxter, the Proceedings of the Statistical Society, and the reports of government commissions of the day. But all these failed to provoke a remaking of the general body of theory aiming at the elucidation of the exchange economy. Though there were several who, like Hearn, could substantially modify most of the important doctrines of Ricardo by borrowing the suggestions of others,[1] yet they lacked what Marshall later called "architechtonic power." The science was ripe for a new synthesis at least a decade before it came.

III

The economists of the day were not backward in offering their reasons for the lack of progress. In fact it would seem that most of the components of an explanation were canvassed by one or other of them. But systematic inquiry seems for the most part to have been absent. Explanations leaned towards single, or at least, simple, causation, a consequence perhaps of the fact that many of them appeared incidental to other themes, or as a preliminary to the dispersion of the error of others.

There is always a temptation for those at variance with orthodoxy to argue that a fundamental blunder lies across the path of progress, and to infer that the advance will proceed only when the error has been removed. There was of course the Wages Fund, seeming to block the way for both wages and capital theory. There was the confusion inherited from Smith, still inadequately elucidated, between labour and exchangeability as the cause of value. For this reason, said MacLeod, "The whole subject is thrown into irremediable confusion." [2] For many, the trouble lay in Mill's celebrated dictum that "demand for commodities is not demand for labour." "It is no wonder," complained Sir Anthony Musgrave on the strength

[1] For an excellent study of Hearn, see J. A. La Nauze, *Political Economy in Australia*. Melbourne, 1949. Chapter III.

[2] *The Principles of Economical Philosophy*. London, 1872-1875. Quoted *Quarterly Review*, July, 1877, p. 130. It was J. L. Shadwell's opinion "that no great step can be made in advance without some improvement in this department." *System of Political Economy*. London, 1877, p. 20.

of twenty years in seven colonial governments spent in treating economic problems, "that political economy advances so slowly when such a paradoxical question as this remains open at its very threshold."[1] The related proposition that "all unproductive consumption decreases the national capital, or tends to prevent its increase," [2] presented by Mrs. Fawcett in naked simplicity, stirred the smouldering dissatisfaction with Say's Law, causing men like William Lucas Sargant to wonder when reconsideration and progress would come.[3]

Not a few held that the study had suffered because of bad presentation. Why, asked Cunningham,[4] "when a case is argued fully, as that of Political Economy has been during the last century," should the listeners remain unconvinced? Either the statements are untrue, he concluded, or they have been badly expressed. "The latter appears to me to be the true explanation." Sidgwick took the view that the definition of terms had been approached in the wrong spirit. Failure of definition had led to failure to ensure that attention was "fixed on distinctions and relations of fact." [5]

Others blamed things on the effort to attain an illicit precision. "This hopeless ambition," wrote Bonamy Price, "has led to the great public misfortune of the decay of authority into which Political Economy has fallen." [6] The *Quarterly Review* in commenting on Jevons' *Theory* expressed the same view in more colourful language: "Were anyone to busy himself with translating Ricardo into the Maori language, or into hieroglyphics, we should admit that such employment might be of use to some one, at any rate to the translator himself . . . But the political economist . . . must employ himself in a different way." [7]

[1] *Studies in Political Economy*. London, 1875, p. 88.
[2] *Political Economy for Beginners*. London, 1874, p. 29.
[3] In Richard Jenning's view progress was awaiting "a right understanding of those fundamental principles of psychology which are the groundwork of Political-economy." *Natural Elements of Political Economy* London, 1855, p. 14.
[4] *Mind*, July, 1878, p. 369.
[5] *Fortnightly Review*, 1st February, 1879, p. 309.
[6] *Chapters on Practical Political Economy*. London, 1878, p. 19.
[7] January, 1879, p. 200.

It might be argued that people like Price, Laing, Cunningham, and the *Quarterly Reviewer*, were confirmed pragmatics, averse to scientific claims. But others, like Shadwell and Thornton had made serious efforts to uncover the laws of the market, but had given up in disillusion. "As, therefore, all theories which I have met with appear to be truisms," wrote Shadwell, "and I am unable to devise one which will satisfactorily account for the phenomena of market value, I am forced to leave them unexplained." [1] The scientists of the day were not slow to observe the weakening claims of the political economists to be numbered among them. In 1877 Sir Francis Galton, in his zeal for the good name of the British Association, addressed to it, *Considerations Adverse to the Maintainance of Section F.*[2]

There were some who found the cause, not in the study itself, or its practitioners, but in those responsible for other branches of science related to it. These studies supplied the data on which the economist reasoned, and such information as they had provided had been fully systematised. This view was implicit in the writings of Cairnes, and indeed all those, and they were many, who accepted his authority. But it was Robert Lowe who made it explicit: "I . . . imagine that, before we can attain new results, we must be furnished from without with new truths to which our principles may be applied." [3]

According to another widely held view, political economy was becoming moribund simply because the leading practical questions with which it was concerned were regarded as answered. Jowett, we are told, believed that, with the exception of the field of distribution, "Political Economy, like Benthamism, has done its work." [4] It was Mr. Gladstone's

[1] *System of Political Economy.* London, 1877, p. 132.

[2] *Journal of the Royal Statistical Society*, September, 1877, p. 468. "It is believed," submitted Galton, "that the general verdict of scientific men would be that few of the subjects treated fall within the meaning of the word, 'scientific'."

[3] *Fortnightly Review*, December, 1876, p. 619.

[4] E. Abbott and L. Campbell. *The Life and Letters of Benjamin Jowett, M.A.* London, 1897. Vol. I, p. 131.

opinion that the application of economics to public policy was almost complete.[1]

A double effect of this apparent exhaustion of application was noted. On the one hand, the main stimulus to hard thinking seemed to be gone. Cobden, in his missionary zeal for free trade, had argued that recourse to first principles or remote contexts would do not more than unsettle the mind.[2] Even among the economists themselves there was a temptation, as one observer complained, no doubt with Henry Fawcett and Thorold Rogers in mind, to neglect "the pure and unexciting investigations of theory for the dazzling attractions of the art of government." [3]

But perhaps the most damaging aspect of the removal of the need for mental discipline, said Cairnes, was the invasion of the field by "sociolists and smatterers." Free Trade, whatever its intrinsic merits, had debauched the study. "Many now enrolled themselves as political economists," wrote Cairnes, "who had never taken the trouble to study the elementary principles of the science . . . even those who had mastered its doctrines, in their anxiety to propitiate a popular audience, were too often led to abandon the true grounds of the science . . . " [4] "It is anarchy, as it seems to me," Cairnes warned, "with which we are menaced."[5]

There was only one way to purge the anarchical spirit : all must be called to the bar of sound method. "No other escape is open to economists from the confusion and the contradictions in which the science is involved . . . " [6]

[1] *Fortnightly, ibid.*, p. 627.

[2] *Anti-Corn Law Circular*, No. 1, 16th April, 1839. Quoted William Atkinson, *Principles of Political Economy*. London, 1840, p. 272.

[3] W. Donisthorpe, *Principles of Plutology*. London, 1876, p. 11.
Cairnes was credited with being the first "to bring back, or rather to try to bring back, the truant savants to their duties."

[4] *The Character and Logical Method of Political Economy*. Second Edition. London, 1875, p. 4.
Hearn observed that the success of the free trade cause had embarrassed political economy with "many enthusiastic but ill-instructed admirers." *Plutology*, p. 3. *Vide* also Cairnes' *Essays in Political Economy*. London, 1873, p. 286.

[5] Review of Jevons' *Theory*. *Fortnightly Review*, January, 1872, p. 72.

[6] *Character and Logical Method*. p. x.

Jevons took the opposite view. For him atrophy was the result not of anarchy, but of despotism. However many dilettantes there might be about, the great shadow over political economy was "the noxious influence of authority." [1] The hegemony of Mill lay heavy on the science ; it was necessary to "break the monotonous repetition of current questionable doctrines, even at the risk of a new error." [2] Jevons' attitude found a good deal of support.[3] The despotism of which he and others complained took the double form of parochialism and insularity. Not only were home growths denied the chance to flourish, so too were ideas from abroad. Cairnes had no doubt that political economy was essentially an English business, and that contemporary French and German ideas were scarcely worthy of notice.[4]

These, then, were the contemporary explanations. Was doctrinal error the root of the trouble, or was it faulty formulation, or false method, or the arrested development of peripheral studies, or the deceptive discovery of sound policy, or the diversion of economists to public platforms, or the anarchy of dilettantism, or the despotism of authority ?

IV

The factors conditioning the direction and speed of men's thoughts are still beyond the power of men to fathom and relate ; there can of course be no finality in answering such

[1] *The Theory of Political Economy*. Fourth Edition. London, 1931, p. 275.

[2] *ibid.*, p. 277.

[3] *The Quarterly Review* (July, 1871, p. 237), complained of the ease with which "the rash champion of good sense" was "consigned to the *limbus infantum* of immature inquiries." Bagehot (*The Economist*, 17th May, 1873) spoke of Mill's "monarchical influence." James Stirling wrote (in *Recess Studies*, Sir Alexander Grant, ed., London, 1870, p. 332) of Mill's authority in political economy : "Mr. Mill's is a godlike power." "No one thinker," wrote Sidgwick, of the second half-century, "so far as I know, has ever had anything like equal influence." (A. Sidgwick and E. M. Sidgwick, *Henry Sidgwick, A Memoir*. London, 1906, p. 36).

[4] *Essays on Political Economy*. London, 1873, p. 232. "Every great step in the progress of economic science (I do not think an important exception can be named) has been won by English thinkers . . . " In fairness it should be said that Cairnes could have had no knowledge of Cournot or Gossen. (Jevons' *Theory*, p. xxxii). But his reception of Jevons' system seems to indicate his likely attitude.

questions. But perhaps a beginning may be made in assessing them, in particular cases, where they operate as more proximate causes.

It is hard to believe that doctrinal error was, in itself, a strong arresting factor in the third quarter-century. Errors there no doubt were, both of doctrine and method, which, if endowed with the power of self-perpetuation, would have been fatal to growth. But it would appear that the fallacies of the day were such as would have been incapable of maintaining themselves in an atmosphere of vigorous and unprejudiced discussion. Their power seems to have lain in their sheltered existence. More than this, the corpus of doctrine was inadequate, not at a single point, but at several.

Nor does it appear that the state of affairs could be blamed to any great degree on the peripheral studies. For neo-classicism, when it came, did so without new data from other disciplines. Of course it used, under pressure from men like Fleemin Jenkin, techniques derived from mathematics and engineering, but these were as available to Mill and Cairnes as to Jevons. Yet there is a sense in which all intellectual progress hangs together. The English political economists of the 'sixties and 'seventies were distrustful of measurement—Cairnes, Fawcett, Rogers, Price, Sidgwick, Cliffe Leslie—all were moulded in a philosophical tradition rather than a mathematical one, in their attitude to society. But this meant, not that economics was held up because other techniques had lagged, but rather because the exclusiveness of its practitioners, rooted in their upbringing, made them resist new methods.

The vogue of "social science," which had reached great heights at this time, probably did result in some absorption of intellect that might have been devoted to the narrower field of economics. But the loss of analytical thinkers could not have been very serious, for it is difficult to conceive of men of the bent of mind of Herbert Spencer settling down to get behind the heady concept of social evolution to the more precise laws of economic behaviour. Indeed, the National Association for

the Promotion of Social Science, whence Galton and others sought to banish economics, had no intention of doing so.[1]

The view that a period of theoretical quiescence signifies a period of economic tranquillity is of course part of the general thesis that there is a high degree of correlation between the amount and quality of economic thinking and the degree of "challenge" offered by the problems of the day. This is a view that is very difficult to establish, if for no other reason than the time lags inevitably associated with the response of thoughts to events. It would appear that by the 'sixties and 'seventies the trade and monetary problems emerging from the war had found reasonably workable solutions, and that, in general, progressive improvement of economic conditions continued from the 'forties to the 'seventies. But it is clear that Mill, Jevons, Fawcett, Cairnes, and others were greatly worried about the problem of social amelioration. Yet the economists of the day largely opted out of such problems insofar as their theoretical systems were concerned. Though some might concede with Mill that the laws of distribution were subject to social arrangement that could be consciously altered, they declined to enter upon the thorny path leading to the rules of economic welfare. Even Mill confessed to Rau that "I regard the purely abstract investigations of political economy as of very minor importance compared with the great practical questions which the progress of democracy and the spread of socialist opinions are pressing on . . ." [2] Social amelioration was not to be systematised, but was left to the new social scientists, themselves rendered less effective than they might have been by the optimistic doctrine of evolutionary improvement. The social anthropologists and historians fell heir also to the problem of differential rates of advance among different societies, at

[1]Sir Robert Kane, F.R.S. took it as an object of the Association that "political economy . . . should be freed from those narrow and chilling limitations to which, by many Economists of the English School, they have been until recently subjected." Presidential Address, Economy and Trade Section. Proceedings, 1867, p. 124.

[2]H. S. R. Elliot, ed., *The Letters of John Stuart Mill.* London, 1910. Vol. I, p. 170.

different times. When Cairnes [1] discusses these matters it is with reference to the opinions of Spencer, Sir Henry Maine, Guizot, and Mill. So, too, with the need, described by Jevons, for "a science of commercial fluctuations." [2] The question of economic stability was left by Fawcett and Cairnes largely in the hands of monetary theorists, economic journalists, Governors of the Bank and City men.[3] The fact that problems of the day, and the causes from which they flowed, were not allowed to intrude into the theoretical system was not due to the insignificance of the problems, but rather to the momentum of the forms of thought economists had inherited, not from a period of tranquillity, but of painful transition. The rise of social science and social anthropology had made this attitude easier, for here were new men with new techniques, promising much for the understanding of society, energetically tackling problems ruled by men like Cairnes to be *ultra vives* the economists.

But even if it be conceded that the economic problems of the day were less pressing than formerly, or capable of being abstracted from, there remained the intellectual challenge of a system of thought that was far from perfect. A respite from policy hunting might have been expected to make possible a revival of speculative thought even on the traditional basis, much earlier than the 'seventies.

The fact that a political economist was also a politician could be damaging to the science where the man in question dissipated his energies in politics or in any other direction, and yet was securely in possession of a leading rostrum. Ruskin knew he was on a good thing when, in charging "the nominal professors of the science" with failure to "do their duty in investigation of it," [4] he chose Fawcett as his special

[1] *Fortnightly Review*, 1st January, 1875, p. 63 *et seq.*

[2] *Fortnightly Review. ibid.*, p. 631.

[3] Bonamy Price was of the opinion that the City had elbowed the economists out of the field. "In some departments of Political Economy, the doctrines of merchants and bankers have subdued the whole land, and almost put a stop to all independent thought which should presume to contradict the theories of the business men." (*The Principles of Currency*. Oxford and London, 1869, p. 1).

[4] Ruskin, *Works*. E. T. Cook and A. Wedderburn, *The Works of John Ruskin*. London, 1912. Vol. XXVII, p. 378.

butt. "We are now ruled by a Cabinet of professors," complained Sir Edward Sullivan with some exaggeration, "what the rule of the professors will eventually do for us, God only knows!"[1] But the number of economist-politicians was relatively small, and no very far-reaching explanation can be based on their behaviour.

In a sense Cairnes' fears of anarchy had some basis. He was conscious that the old outlook had been unable to embrace or systematise the new ideas. Not only so, the innovators ranged all the way from those meriting serious rebuttal, to the panacea mongers. Even the patient Mill complained of those who undertook to show that "the settled principles of the science are wholly fallacious." To one such he wrote, "You are not the first, or the hundredth."[2] But the plenitude of discussion was not in itself a bar to progress. The need of the day was in fact for someone to lift from obscurity some fundamental notion left undigested by the ruling system, and use it as an informing principle around which the theoretical structure could be re-fashioned.

Jevons would seem to have been more right than Cairnes. In his view, a few men, by the vagaries of university appointments, were vested with a status that made it difficult or impossible for outsiders to work a change. Though this is an over-simple explanation, it gives rise to two questions, the pursuit of which may be enlightening: how was economic authority gained in the England of the 'sixties and 'seventies, and why were those who enjoyed it largely sterile?

V

In the second quarter of the nineteenth century in England the amateur economists, though losing ground to the academics, were still active. But by the 'seventies, acid reviewers, unwilling publishers, and the academic economists themselves, had made it much more difficult for the amateurs to gain a hearing. Jennings with his psychological theories, MacLeod with his variegated innovations, Sargant with his

[1] *Our Economic Cato's*. London, 1872, p. 45.

[2] *Letters*. Vol. I, p. 206.

underconsumption case, and others, had complained bitterly that vested interest in ideas was against them. Both editions of Longe's "Refutation of the Wages Fund" were largely ignored. "The English market for economic publications is extremely limited," wrote Cliffe Leslie in 1874, "but it is notorious that various doctrines to be met with in the English text-books have often been questioned . . . "[1] Whatever the cause, the amateur contribution was falling off. This threw almost the whole responsibility for the science on the new academics.

They fell into four main groups. There were the Drummond Professors at Oxford, with their five-year tenures, the Professor at Cambridge, the Professor at University College, London, and the Professor at Owen's College, Manchester. In addition, Cliffe Leslie and John Kells Ingram, respectively of Dublin and Belfast, began, in the 'seventies, their crusade for a historical political economy. But their challenge was not really effective until half-way throughout the decade, beyond the scope of our period.

Oxford, Cambridge, and London proved unequal to the occasion. The Oxford men showed a strong tendency to revolt against the method of the classics at a time when the growth of the science required that the plentiful post-Ricardian ideas of Senior, Lloyd, Longfield, Jennings, Longe, Thornton and the rest be worked into the old system. The Cambridge Chair passed in 1863 from one man of severely limited originality to another : Pryme was succeeded by Fawcett, the first holder of a full Chair, who continued in possession until 1885. At University College, London, authority lay with Cairnes, dogged by his fears of a directionless science, and dedicated to the remarking of the old paths.

VI

From the mid-century onward to Edgeworth's day, the successive Drummond Professors moved away from the Classical tradition. This they did largely on the grounds of

[1] *Essays in Political Economy*. Dublin, 1888, p. 42. Leslie wrote to Mill (*Letters*, Vol. II, p. 199) about his difficulties in getting articles accepted.

method. They were sceptical of scientific pretensions for economics. This was certainly true of Travers Twiss, G. K. Rickards, and Charles Neate.[1]

But it was James E. Thorold Rogers who offered a frontal attack on the system of Ricardo and Mill. Rogers was regarded at Oxford and Westminster as an "original"; there was at one time current at both places a small literature of Rogers anecdotes. He had occupied the revived Chair at King's College, London, from 1859, and continued to do so until his death in 1890. But his heart was in the Oxford Chair, which he twice filled—1863-8, 1888-90.

Rogers made it clear that in his view "much of the political economy which was currently in authority was a collection of logomachies."[2] Nothing was to be gained by browsing on "the thorns and thistles of abstract political economy."[3] Not only did he reject the methods of thought of the ruling school, he impugned their motives. "In the theory as to how wealth is distributed, the true centre of all economical inquiries, the suspicion that it deliberately advocates an unjust distribution hopelessly discredits it."[4] Rogers' prescription was a return to history. But he himself was not welcomed to the fold of historians by diehards like Freeman, who no doubt suspected him of using historical techniques to furbish revolutionary theses. "Political economy seems to me to be so much garbage," Freeman had remarked. "The very thing then for a hog like you," was the reply.[5] But Rogers, dispersing his energies as a *frondeur* in all manner of causes, failed to produce a phase of historism in England.

[1] Of Twiss we are told (D.N.B.) that the bent of his mind was "entirely averse to the Ricardian dogmatism then in vogue."

Rickards offered for Cairnes an example of "the confused notions which prevail respecting economic method." (*Character and Logical Method*, p. 165). Neate carried methodological distrust into policy—strongly opposing free trade.

[2] *The Economic Interpretation of History.* London, 1888, p. vi.

[3] *ibid.*, p. 8.

[4] *ibid.*, p. xii.

[5] W. Tuckwell, M.A., *Reminiscences of Oxford.* London, 1900, p. 103.

Between Rogers' two tenures of the Chair came Bonamy Price,[1] who, though regarded as "safer" than Rogers, was even more explicit about scientific claims. "Let economical writers retrace their steps back beyond the point where Ricardo diverged into a wrong path." [2] Like Rogers, he suspected a conspiracy to bemuse the workers : "They must not be told that they must study Political Economy : the scientific jargon with which it has been smothered has ruined its authority for the labouring classes, and for many others also." [3]

But there were important differences in approach between Rogers and Price. Rogers turned upon the earlier Drummond outlook partly as a revulsion to what he regarded as the illicit finality of Ricardianism, and partly because, without being clearly aware of it, he sought answers to questions that were incapable of illumination by economic theory of the Ricardian sort. Price broke away because he rejected precise conclusions in general.

Rogers' differences with the classics did not however debar him from dogmatism. Though he performed great labour in his inquiries into prices, and spoke of the difficulties of his enterprise, he was not thereby hindered from producing conclusions not inferior in point of positiveness to those of the deductive school. On the basis of his single-handed forays into the jungle of historical material he ascribed "the pauperism and degradation of the English labourer," to "the result of a series of Acts of Parliament and acts of government which were designed or adopted with the express purpose of compelling the labourer to work at the lowest rates of wages possible, and which succeeded at last in effecting that purpose."[4] Rogers, in spite of his claims as a fact-gatherer, believed in single causes, and found one in these historical acts of deprivation.

[1]Price, who was three times re-elected, held the Chair from 1868 to his death in 1888.

[2]*Chapters on Practical Political Economy*, p. 20.

[3]*ibid.*, p. 293. For his pragmatism the *Quarterly Review* rewarded Price with approval. Even in detecting him in error, the *Quarterly*, that delighted to harry Cairnes and Fawcett, spoke lightly of "a slip of the pen." (July, 1877, p. 123).

[4]*Six Centuries of Work and Wages*. New Edition. London, 1886, p. 6.

Like Rogers, Price declared his addiction to the real world. But, for Price, proximate cause was enough; the given collocation of immediate circumstance was sufficient for judgment. As a corollary, there was no great call for intellectual discipline. For Price there could be no unity of theory, for he had abandoned the maximising rule.[1] As a result, the distributive shares became indeterminate.[2] His diagnosis of fluctuations looks promising: "In this vital matter there is only one way to escape injury: not to make more fixed capital beyond the amount of savings."[3] But when amounts are considered, again the results are indeterminate, "No rule can be given."

In the eyes of Price, the economist was an instinctive thinker, relying on "judgment," like the business man himself.[4] The economist was, so far as judging policy was concerned, the entrepreneur for the giant firm. But for Price the giant firm did not pose questions involving the whole of its nature, or if it did, they could (and should) be ignored. It was the *ad hoc* adjustment to particular changes in the real world that concerned him, without overmuch concern about unity of explanation.

The result was methodological anarchy. Though Marshall could later say that: "The function of analysis and deduction in economics is not to forge a few long chains of reasoning, but to forge rightly many short chains and connecting links,"[5] Price's chains were too short and too lacking in rigour to be useful. Price, in fact, represented the attempt to keep economic thought in something like the form it took before the rise of the exchange economy—a matter of normative judgments and isolated laws. As the *Quarterly Reviewer* put

[1] *ibid.*, p. 74.

[2] "The market value of labour . . . is incapable of being pre-determined by science" (*ibid.*, p. 208). Interest and rent elements having been abstracted from "profit," "it is incapable of being analysed further." (*ibid.*, p. 133).

[3] *ibid.*, p. 120.

[4] Price was aware of the element of illicit theory in the business man's attitude. "Practical men swarm with theories, none more so . . ." (*Principles of Currency*, p. 1).

[5] *Principles of Economics*. Eighth Edition, p. 773.

it : "He who judges of the mutual relations . . . brought about in the pursuit of wealth . . . must rely on the general accuracy of his perceptions of fact and of probability." [1]

Thus the search for economic law at Oxford, as Whately had advocated, and Senior had practised, was abandoned in the third quarter-century. Instead, the difficulties and dangers of system were re-emphasised.

VII

But if the tradition of Ricardo and Senior lacked heirs at Oxford, political economy at Cambridge, where the great Whewell had tried so hard to sponsor an inductive science, passed in 1863 into the keeping of Henry Fawcett, the disciple of Mill and Ricardo.

Recruitment to Chairs of Political Economy, both at Oxford and Cambridge, was subject, like all university appointments of the day, to arbitrary elements. Because the elections were often devious and disingenuous, not a few were excluded for reasons unrelated to ability. Fawcett's credentials did not seem to go any further than a popular manual, written at the instigation of his friend, Alexander Macmillan, the publisher, but "the reputation gained was of great service." [2] Fawcett, on hearing of his election, wrote post-haste to his mother : "All my friends in the town regard it as a great political triumph." [3] A professed and uncompromising Radical, who had publicly outfaced Whewell on the question of economic method at the British Association, had gained election to the Chair of Political Economy at Cambridge.

But though Fawcett's election was a victory for change in one sense—he had described the works of Mill, the great philosophic opponent of Whewell, as "the chief eduction of his

[1] January, 1879, p. 202.

[2] Leslie Stephen. *Life of Henry Fawcett.* 4th ed., London, 1886, p. 117. At Oxford, too, in spite of Whately's hopes of a "neutral science," the election to the Drummond Chair was infused with politics. Rogers had failed in the 'sixties to gain re-election because of his unorthodox views, or as he put it, "because I traced certain social mischiefs to their origin." (*Economic Interpretation of History*, p. ix).

[3] *ibid.*, p. 122.

mind," [1] yet it was in another sense a victory for orthodoxy. For by the 'sixties the power of Mill was reaching its zenith. Fawcett was his prophet ; even his friends called him the man of one book—Mill's *Principles.*[2]

Thus Fawcett's views were predictable, an important consideration. After all, there were men like Henry Dunning MacLeod about. MacLeod earnestly desired an audience for his strong but novel views, and tried to find it, among other places, at Cambridge. Of his originality there can be no doubt ; Marshall [3] and Jevons [4] have testified to it. But MacLeod lacking the faculty of sustained reasoning, was addicted to provocative epithets, and was highly vulnerable on matters of formal logic. Persons responsible for electing to chairs no doubt felt of such men much as did the *Athenaeum* reviewer who wrote : "His work, on the whole, cannot be safely recommended to anyone not fortified by a previous study of the science." [5] "It will be a disgrace to Cambridge" wrote Mill to Cairnes, "if MacLeod gets the professorship." [6] Originality had to defer to safety.

The career of Henry Fawcett was a legend of Victorian England. Blinded early in life, he nevertheless gained the Chair at Cambridge and entered politics to such good effect as to become Postmaster-General, with prospects of a seat in the Cabinet. Of his beauty of character and strength of purpose there can be no question. But he was a calamity for Cambridge economics. There were too many who would concur when the *Quarterly Review* asked: "Are we not justified

[1] *ibid.*, p. 102. At the same time, and largely by the same token, the Whewell tradition was weakening ; it was well known that the junior Fellows of Trinity were at variance with the Master as often as not.

[2] W. Holt, *A Beacon for the Blind, being a Life of Henry Fawcett.* London, 1915, p. 114.

[3] Marshall wrote that MacLeod had "before 1870 anticipated much both of the form and substance of recent criticisms on the classical doctrines of value in relation to cost, by Professors Walras and Karl Menger." (*Principles*, p. 821).

[4] *Theory of Political Economy*, p. xxvii.

[5] *Athenaeum*, 15th November, 1862, p. 632.

[6] George O'Brien, "J. S. Mill and J. E. Cairnes." *Economica*, November, 1943, p. 274.

in repeating that, when Mr. Mill propounds palpable absurdities, the final *reductio ad absurdam* is supplied by Mr. Fawcett?"[1]

The reasons are not far to seek. To begin with, Fawcett was a politician first, and a political economist second. For a man whose facilities for learning were already limited, to embark on the day-to-day improvisations of politics was fatal to the growth of mind.[2] But not only was the range of interest narrow, the sources upon which it was fed were also restricted. Fawcett did not believe in wide-ranged reading. He urged upon his students the wisdom of studying some good book until they could reproduce the substance and argument of every chapter, suggested Mill's *Principles* for the purpose. "Less reading and more thinking," [3] was his advice.

Cannan described Fawcett as "Mill's interpreter to the populace," [4] an undignified posture for a Cambridge Professor. Certainly, Fawcett based himself firmly on Mill—the Mill of the era before Mrs. Taylor. His own textbook was intended as an introduction to the master. But for him there were no misgivings of the kind that tortured Mill. So positive was Fawcett that he tended to regard the task of political economy as consisting in the dispelling of error. The sense of reaching forward to new truth was wholly absent. Even so mild a modifier of Mill as Henry Sidgwick did not escape Fawcett's defensive eye. "Oh yes," he remarked, "there goes Sidgwick, carping on Mill." [5] Fawcett was a theorist totally uninterested in the foundations of his system [6]—in short a dogmatist.

VIII

In contemporary eyes of the late 'sixties and early 'seventies, the greatest name among English economists, after

[1] July, 1871, p. 242.

[2] "I cannot deny," wrote his friend Leslie Stephen," that he had some of the rigidity and narrowness of mind attached to the solid and practical . . . " *Life*, p. 178. "We only wish" said the *Quarterly Review*, "the Cambridge Professor could permit himself to forget the Brighton Member," July, 1871, p. 242.

[3] J. M. Keynes, *Economic Journal*, December, 1936, p. 590m.

[4] *A Review of Economic Theory*. London, 1929, p. 240.

[5] Holt, *ibid.*, p. 101.

[6] Stephen, *ibid.*, p. 159.

Mill, was John Elliott Cairnes.[1] His discussions of method remained the foundation of his reputation throughout his career.[2] When in the 'seventies it became clear that his arthritic complaint was gradually depriving him of movement and of life, he determined that his remaining strength should be spent in reaffirming and elaborating his work on the logic of the subject.

Basic to Cairnes' conception of economic method was the classification of truths in point of certainty. For him there was an inner circle of irrefragable truth, a sort of central citadel. "The economist," he maintained, "may thus be considered at the outset of his researches as already in possession of those ultimate principles governing the phenomena which are the object of his study."[3] Centred on these "ultimate principles" were successive circles of diminishing certitude. These lesser truths also constituted the connection between the central, universal generalisations, and the real world—they were the *axiomata media*. There was also a sort of promotion system, whereby, as knowledge increased, the degree of uncertainty could be diminished, and new truths move toward the centre. But they would always be consistent with those already there.[4]

Cairnes had two criteria for "the premisses, or ultimate facts of Political Economy." They had to be concerned with the subject in a defined way, and secondly, to be true.

Cairnes, like Mill,[5] was greatly impressed with the dependence of economic phenomena on human behaviour ; he was anxious to stamp out any attempt to escape from the

[1]Cannan (*ibid.*, p. 203) described Cairnes as "the most respected economist of the time in England."

[2]Cairnes had come to notice in 1859 with the publication of his *Character and Method of Political Economy*. *Vide*. G. C. Robertson, *Mind*, Vol. I, 1876, p. 131.

[3]*Character and Logical Method*, p. 77.

[4]*ibid.*, p. 45.

[5]Cairnes had drawn heavily on John Stuart Mill's early essay, "On the Definition of Political Economy ; and on the Method of Investigation proper to it," in *Essays on Some Unsettled Questions of Political Economy*, London, 1844.

problems of the science by confining its treatment to the relations between physical quantities, or for that matter, between mere measurable quantities. Cairnes was much concerned that : "The discussions of Political Economy have been constantly assuming more of a statistical character." [1] This meant that "result are now appealed to instead of principles ; the rules of arithmetic are superseding the canons of inductive reasoning ; till the true course of investigation has been well-nigh forgotten." But, having maintained the essential need for "mental laws," Cairnes denied that "mental feelings admit of being expressed in precise quantitative terms." [2] As a result, in the real world all but the most simple problems were capable of no more than conclusions of a "merely probable or conjectural character." [3]

To establish the scientific status of political economy, and to debar the undisciplined, a strict statement of competence was essential. On the physical side [4] there must be no prying into the business of the engineer, the physicist, or any other dealer in natural phenomena. Attempts to push into the field of psychology were no less mistaken. This defensiveness led to emphasising and preserving unreal distinctions standing in the way of growth.

Further, Cairnes' treatment of the mode of selecting the central truths to dominate the circumscribed field is inadequate. He comes close to arguing general experience and common sense. He says that though the facts of the real world are "so numerous as to defy distinct specification," yet there are some, "the existence and character of which are easily ascertainable," which are of "paramount importance in relation to the production and distribution of wealth." [5] Cairnes sets out three "facts," in which the echo of Senior can be plainly heard : " . . . first, . . . the desire to obtain wealth at the least possible sacrifice ; secondly the principles of population as

[1] *ibid.*, p. 5.
[2] *ibid.*, p. vii.
[3] *ibid.*, p. 109.
[4] *ibid.*, p. 38.
[5] *ibid.*, p. 59.

derived from the physiological character of man and his mental propensities; and thirdly, the physical qualities of the natural agents, more especially land, on which human industry is exercised."

Cairnes believed himself at one with Adam Smith, Malthus, Ricardo, and Mill in regarding these as the "ultimate premisses of economic science." [1] But when he writes in this vein, he is not always clear whether he is referring to "premisses," such as a general effort to maximise gain and minimise sacrifice, or short theorems based on chosen premisses, like the law of population, or a general model from which flows a theory of distribution and long-run development. Of course the "facts" actually admitted to his central core imply all these things. Cairnes took over the classical model of society, and used his discussion of method to establish its primacy. So positive was he of the truth of his central theses that he assigned to statistics, not the task of testing them, but only the links between them and the world.[2]

In addition there were "the subordinate principles and facts affecting the production and distribution of wealth." [3] Among these Cairnes included inventions, the attitude towards the future, custom, religion. Though he conceded that in some situations certain of the subordinate principles might be more important than the central truths, yet the presumption was against them.[4] Cairnes conceived his own contribution to the science to be in terms of these lesser truths, or connecting links between the dominant generalisations and the real world.[5] Though he was in active controversy with Mill and others of

[1] *Some Leading Principles of Political Economy Newly Expounded.* London, 1874, p. 1.

[2] *Character and Logic*, p. 85.

[3] *ibid.*, pp. 43, 44, 70.

[4] As J. S. Mill warned (*Essays*, p. 153): "Such is the nature of the human understanding that the very fact of attending with intensity to one part of a thing, has a tendency to withdraw the attention from the other parts."

[5] *Leading Principles*, p. 1.

the classical school, he stopped well short of attack on the central citadel.[1]

To a later generation the dangers of the central citadel approach are manifest. The fundamental unity of phenomena is hidden ; the sense of the facts continually changing as they react on each other cannot develop in an atmosphere in which certain immutable ones are regarded as determining all the rest. It is impossible to say, once for all, what facts of the physical or psychological world will have, at any given time, the greatest significance. Such things will differ with the problem to be solved, and the context within which it presents itself.

But Cairnes was distrustful of the grand synthesis. He warned of the attraction exercised over men's minds by "some ultimate force, some paramount and all-pervading principle, by intellectual deductions from which light may be let in among the confused and jarring elements of the world." [2] He pointed out how earlier thinkers had arrived at intellectual sterility by starting with the search for such an "Atlas for their thoughts." It is pretty clear from his attitude to Comte that he regarded the fragmentation of social science as an insurance against omniscient solutions.

Cairnes thought in terms of *ad hoc* generalisations which, once established, were admitted to the central core. He appears to have been largely untroubled by the problem of "adding up," but to have assumed that these principles, would, taken together, constitute the truth. Cairnes was well aware that in the physical sciences as Whewell had pointed out, "as observation goes on . . . incoherent appendages accumulate, till they overwhelm and upset the original framework." [3] But it was otherwise with economics. Far from being worried that the theory of distribution that flowed from his "ultimate

[1] As Jevons observed to Foxwell : "He cannot stop at any definite non-competing groups, and his ideas followed out lead to an entire rejection of the theory." *Letters and Journal of W. Stanley Jevons*. London, 1886, p. 408.

[2] *Logic*, p. 69.

[3] *ibid.*, p. 228.

facts" was eclectic, he attacked Say [1] for seeking a unified explanation. Say had argued that rent, interest, and wages were perfectly analogous, and that each gave "the measure of utility which the productive agency (of which each is respectively the reward) subserves in production." This was abhorrent to Cairnes : it meant that "the distinct economic laws which regulate the distribution of wealth . . . are confounded."

The nature of Cairnes' approach to economic truth was reflected in his attitude to history. He believed, with Buckle, that history should be approached in the light of economic principles.[2] He had himself written *The Slave Power*, "to show that the course of history is largely determined by economic issues." [3] But he emphatically denied the need to go to history to construct the analytical tools of his science : political economy could illuminate history, but the reaction was not mutual.[4]

The difference in approach between Cairnes and Jevons was fundamental. Cairnes was concerned with constructing defences for political economy—against those who would confuse it with politics, against those who impugned its scientific claims, against its own errant practitioners. Jevons was concerned with the discovery of a new line of advance. For him present form had no sacrosant character. He cheerfully faced the prospect of the renovation of the study ; in fact in this lay its only hope. Jevons, instead of warning off the historians, sociologists, statisticians, and the rest, would make peace with them by the simple device of partitioning the field : "Subdivision is the remedy." [5]

[1] *ibid.*, p. 14.

[2] *Political Economy as a Branch of General Education.* London, 1860. p. 14.

[3] *The Slave Power.* London, 1862, p. vii.

[4] Cliffe Leslie noted this one-way traffic and could not refrain in his obituary of Cairnes from observing that future economists would more and more regret the failure of Cairnes to "develop another side of the relation between history and political economy, namely the connection between the whole social history of a country and its economic condition as one of the phases of the entire movement, and not as the result of a single principle or desire." *Essays*, p. 61.

[5] *The Theory of Political Economy.* Fourth Edition. London, 1931, p. xvii.

But matters were not to be left in this state of dissolution —a higher synthesis was possible through the mechanics of self-interest and utility : "The establishment of such a theory is a necessary preliminary to any definite drafting of the superstructure of the aggregate science."[1] But it was one thing to point the way to the "aggregate science," and another to attain it. Jevons was very conscious of the difficulties of clothing his abstractions. His general view of the progress of science was one of ever receding horizons : "The more we have explained the more there is to explain." [2] Every extension of knowledge served to reveal new unanswered (and hitherto unasked) questions. For Cairnes' conceptions of a "finite" science, Jevons substituted the concept of an infinite hinterland beyond the narrow bounds of the known.[3] Cairnes would demarcate, fragment, deny the possibility of a general synthesis of social study ; Jevons would point the conceptual possibility, but warn of the remoteness of achievement.

The Ricardian system had as its chief custodian in the early 'seventies an academic formed in a philosophic non-mathematical tradition. "The amazing blindness of this author," noted by Edgeworth, making Cairnes unaware of the mathematical nature of the Ricardian system and even his own modifications of it, caused him to cling to formal logic and the syllogism when the subject had reached the stage at which such a technique was incapable of sustaining further advance. When a system, the fruit of daring simplification and brilliant insight falls into the keeping of a methodological conservative the upshot can only be that the concepts and emphases of that system are no longer recognised as what they are—a particular choice of variables, but tend to turn to absolutes.

IX

The academic followers of Mill did not take kindly to those who refused deference. Jevons had himself been prejudiced

[1] *ibid.*, p. xviii.

[2] *The Principles of Science.* Third Edition. London, 1879, p. 759.

[3] *ibid.*, p. 752. Jevons noted in the writings of Mill and Comte "an erroneous and hurtful tendency to represent our knowledge as assuming an approximately complete character."

in examinations for introducing into his answers renovations of his own design.[1] The reader of his defiance of the classical school who is surprised by his vehemence may find the reason in his sense of repression. He sought eagerly for predecessors, and gained comfort in discovering them. One of the reasons for his move to London was to seek a sympathetic hearing for his system.[2] The polemics of Cairnes had become notorious ; even the mild Sidgwick found him "deficient in intellectual sympathy." [3] Leslie Stephen, friend and biographer of Fawcett, conceded that Mill, Cairnes, Fawcett and their associates "were apt to regard opponents as illustrating Hobbes famous aphorism : 'If reason be against a man, a man will be against reason'."[4] Or, as Marshall, speaking of this period, put it : "Economic science . . . was more confident then than now . . . Its general propositions were bold and preremptory." [5] The younger men could express their private dissatisfaction with Fawcett, but to no avail. There was at least some justice in Jevons' complaint, "The Mill faction never scrupled at putting their lecturers and examiners wherever they could." [6] Cairnes' *Logic and Method* was prescribed for the Cambridge Moral Sciences Tripos ; [7] Fawcett recommended Cairnes' writings as second only to those of Mill.[8] George Darwin, aware of all this, claimed attention for Jevons' *Theory* because his audience was only one-fiftieth of Cairnes'. [9]

[1] *Letters*, p. 154.

[2] *ibid.*, p. 343.

[3] *The Principles of Political Economy*. Second Edition. London, 1887, p. 5. " . . . he could hardly avoid representing any doctrine that he did not hold in such a way as to make it almost inconceivable to his readers that it could possibly have been maintained by a man of sense."

[4] *Life of Henry Fawcett*, p. 142.

[5] The Old Generation of Economists and the New. In *Memorials of Alfred Marshall*, ed. A. C. Pigou, p. 295.

[6] *Letters*, p. 409.

[7] *The Saturday Review*, 26th June, 1875, p. 825.

[8] *Fortnightly Review*, 1st July, 1875, p. 152.

[9] *ibid.*, 1st February, 1875, p. 252.

English economics languished between Mill's *Principles* of 1848, and Jevons' *Theory* of 1871, largely because the academics had gained authority before they had developed competence. The Oxford Professors could not progress because, having abandoned the mode of reasoning of their predecessors, they lacked a technique to guide them in their new departure. Fawcett could not get beyond Mill, must less make his way over "the untrodden pass between the heights of physics and psychics," because he scorned the need for a new approach. Cairnes could get no further, because, though for him method was paramount, his defensive concern with it killed his initiative. Through this barrier of obtuseness the renovating principle that was to animate the neo-classicism of the last quarter century could not easily penetrate.

Against it Jevons flung his new method and his new theory. He knew the power of his rivals, and his consciousness of it caused him to erupt in a dramatic way. But Jevons, who as a young man had stripped Boole's logic "free from all his false mathematical dress," [1] was himself somewhat taken aback by Edgeworth's rigorous demonstration of mathematical psychics.[2] "I am inclined to find fault with mathematical writers," wrote Jevons, "because they often exult in what they can accomplish, and omit to point out that what they do is but an infinitely small part of what might be done." [3] In this, he showed that he was conscious of the philosophical tradition in which he stood. Into English philosophy and political economy had gone the ideas derived from the moral philosophy of Dugald Stewart, William Whewell, Adam Sedgwick, and Henry Sidgwick himself, with their deep-rooted misgivings of over-much precision in theorising about society. Mill, on the strength of the notices of the *Theory of Political Economy* that reached him at Avignon, wrote to Cairnes : "Jevons is a man of some ability, but he seems to me to have a mania for . . . a notation implying the existence of greater precision in the data than the question admits of." Mill did not expect he

[1] *Letters*, p. 182.

[2] *Mind*, 1881, p. 581.

[3] *Principles of Science*, p. 755.

would think favourably of Jevons' book.[1] But with Rogers, Price, Fawcett, and Cairnes, in their several ways, this attitude had gone to seed. It was Jevons' mission to usher in the marginal utility approach and the frank use of mathematical concepts, making it possible for Marshall to proceed to a new and fruitful synthesis of the new and the old. Had Jevons not acted with vigour, it is at least possible that the theory of the exchange economy would have failed to survive the onslaughts of the historians, the custodians, *pro tempore*, of "human" economics.

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[1]G. O'Brien, *Economica*, November, 1943, p. 274.

The Case for Rationalisation of the Building Industry

I. What the Industry is.

Building output, or constructional output in general, can be defined with a reasonable degree of precision. One such definition refers to the provision of "fixed structures, whether permanent or temporary, built upon the earth's surface (or immediately below it), and designed for shelter or as aids to transport." The output of the building and civil engineering organisation in any country thus consists of all artificial and immobile works of construction (whether "permanent" or temporary), intended for shelter or communication, and whether in process of renewal by maintenance or repair, or newly built.

This excludes the construction of mobile units such as ships, rolling-stock, automobiles, caravans and bathing-machines with wheels, but includes the construction of beach-huts and chicken-houses, and the provision of such fixed transport or shelter facilities as harbours, railway lines, roads, sea-groynes, houses, factories, educational establishments and buildings in general. But this is, of course, a definition of a class of *output* not the definition of an industry.

The output included relates only to certain types of fixture. Such output as provides shelter and aids to communication somewhat narrowly conceived is included, but work done to improve labour's effectiveness by installing plant or machinery in buildings is not counted. The line of division here is partly conventional. Thus the installation of machine tools is definitely and always excluded, and, for most purposes (but not always) the installation of heating and ventilating plant, or electrical equipment, in a building is also left out. Examples of industries that specialise in the provision of fixtures closely associated with building are the constructional engineering industry, and the electrical wiring and contracting industry (which themselves in turn overlap the iron and steel industry and the electrical engineering industry respectively). Then

again there are certain specialist processes in building itself which are for some purposes included and for others excluded from the notion of "building output" (for instance the provision of patent floors or roofs).

This idea of "building and civil engineering output" is qualified always by the notion that such output is provided by on-site work. The generally accepted idea, at least in Great Britain, is that "on-site" work only is to be counted as building or civil engineering work proper. Work done off-site is regarded as belonging to some other industry (usually to some branch of the wide class of building materials' industries), or to a non-building department of some building firm, such as a wood-working shop.

What then is the building and civil engineering industry? Is it the sole agency for supplying the output just defined? Unfortunately for precision the definition of the industry is not so simple as this. Almost every "industry" in a modern society does some direct building or civil engineering work of its own, at least by way of maintenance and repairs, and some industries, or public authorities, employ relatively large forces of building or civil engineering workers.

The building and civil engineering industry is therefore officially defined to include only those undertakings which are "wholly or mainly" engaged upon building or civil engineering output, and the official definition coincides on this point with popular usage, and with (to some extent) the economist's convenience. The output of the Building and Civil Engineering Industries in Great Britain in 1949 was estimated at £864 millions, while total building and civil engineering output for the same year was put at £1,248 millions.[1] Thus it is estimated that £384 millions, or 30%, of the building and civil engineering *output* of the country was done by undertakings which were not part of the industries themselves.

The industries (or "the industry," as it may be convenient to call building and civil engineering jointly where the context

[1]Table 86 of the *Monthly Digest of Statistics* for November, 1950, source, Ministry of Works.

makes the term unambiguous) are therefore society's main, but by no means sole, instrument for meeting requirements for constructional work of all kinds. The industry consists of a number of privately owned competitive undertakings. The present essay is a descriptive and critical account of this organisation.

II. The Job to be Done.

The organisation required by, or appropriate to, any industry depends upon three things : the job to be done (and the schedule of costs), the way that the market for its product works, and the historical and environmental factors. In the case of this industry all three of these factors have great importance, and special peculiarities. It is evident, for example, that the degree of specialisation appropriate to different types of firm is closely linked with all three ; it depends not only on the work required (at a price), but on the way in which that work is let out, and on the historical factors affecting the training of skilled craftsmen, the methods of providing materials, and many other points.

What is the job to be done? Over the years 1947-49 inclusive, the output of the industry settled down to fairly steady proportions (see Table I), with housing work of all kinds accounting for over half, industry and commercial work for one-sixth, and other work for the remaining third of the total. Apart from an actual world war these proportions are not likely to change much over the next twenty years. There may be some major shifts *within* the three broad classes of output that have been mentioned, but there are not likely to be big shifts *between* these classes, since the pressure of demand in respect of each seems to be fairly equal. An agitation for more to be spent on housing will, if pushed far enough, create a counter-agitation to reserve some materials and labour for industrial investment and so on. Moreover the total *need*, and hence the total socially supported effective demand, for all three—housing, industrial building and "other work"—is likely to remain very high for at least 15 to 20 years.

TABLE I

ESTIMATED VALUE OF OUTPUT OF THE BUILDING AND CIVIL ENGINEERING INDUSTRY, 1946-1950 IN GREAT BRITAIN

Percentages of total value on each of 13 types of work.

TYPE OF WORK	1946	1947	1948	1949*	1950*
I. HOUSING WORK	**63·6**	**55·9**	**52·6**	**49·7**	n.a.
1. Temporary house erection ...	4·7	1·2	0·3	—	—
2. Construction of permanent houses and flats and housing site preparation	27·2	29·9	27·8	24·8	26·1
3. Repair and maintenance of houses including conversion and adaption	14·7	15·4	17·4	24·9	†
4. War damage repairs to houses ...	17·0	9·4	7·1		
II. INDUSTRIAL AND COMMERCIAL WORK	**11·9**	**15·3**	**15·1**	**15·1**	**16·8**
5. Factories and industrial premises...	8·5	11·3	11·1	9·7	11·9
6. Storage, warehouses and docks ...	0·7	0·9	0·8	0·9	1·2
7. Shops and commercial premises ...	2·7	3·1	3·2	4·5	3·7
III. OTHER WORK	**24·5**	**28·8**	**32·3**	**35·2**	**57·1†**
8. Public utilities	3·7	3·3	4·1	4·4	5·1
9. Agricultural work	1·4	1·4	2·2	1·1	1·4
10. Hospitals, schools and universities	2·0	2·1	3·1	3·9	4·8
11. Coal mining and opencast coal ...	2·4	1·9	2·4	2·5	2·3
12. Output of firms without operatives	2·7	3·0	2·9	2·8	3·0
13. Other work ‡ including war damage repairs	12·3	17·1	17·6	20·5	40·5†
TOTAL OUTPUT OF B. & C. E. INDUSTRIES	**100·0**	**100·0**	**100·0**	**100·0**	**100·0**

* Average for first three-quarters of the year.

† In 1950 the figure for items 3 and 4 is included in the total for "Other work" and in item 13.

‡ e.g. Aviation, Camps, Government Training Centres, Police and Fire Stations, etc.

Source : Ministry of Works.

Not much argument is required to show that building "needs" are great. The age-distribution, and present state of repairs and amenities, of the existing stock of houses, and the shortage of accommodation for the existing number of families, are too well-known to need analysing at length, and this indeed is unnecessary for the present purpose. As for industrial building, the reports by Working Parties and Anglo-American teams, on British industry published between 1945 and 1950 sufficiently documented the need for increased activity here. Other building work, the third main category, includes transport facilities, educational programmes, and public buildings of all kinds, and these classes, too, are known to contain arrears of socially needed works.

New industrial building, and the replacement of obsolescent factories and workshops is proportionately almost as extensive an inherited liability for the Britain of 1950 as the sub-standard houses of its older industrial towns. There also still remain extensive central areas of war-damaged towns. Non-residential building and civil engineering construction, which accounted for 450,000 workers in the industry at the end of 1948, is also likely to increase in volume as the time comes when obsolescence can no longer be disregarded (for instance, in road-building or replacement of old schools). Total employment in the industry might well remain stable at about 1 million workers employed until 1965, assuming the continuation in the main of present methods of construction. After 1965 there might begin to be a reduction in the size of the labour force, but owing to the sustained demand for the replacement of houses and other obsolescent buildings no catastrophic fall in employment is necessarily to be expected. By that time, moreover, the present population outlook may have been considerably modified.

In 1948 the total national resources available at home amounted to about £10,000 millions annually in Great Britain. The gross value of building and civil engineering work done in that year absorbed about 12% of this total, the industry accounting for 8%, and housing for 4%. Before World War II the country used 3·4% of its resources on housing, and

11·6% on all building and civil engineering work—just below the post-war percentages.

In one sense the country could "afford" a larger building programme in 1938 than in 1948, but on the other hand the need for new houses, schools and factories was more acute after than before the war. Moreover the two social objectives of increased national productivity and less inequalities in the distribution of real incomes had been accepted by a political majority.

The economic question is how many other things "the nation" is willing to forego. In a given year the production of 100,000 houses or an equivalent quantity of other building means a corresponding sacrifice in current personal consumption, or in some other outlay (if full employment in either situation is assumed). 100,000 houses mean a sacrifice of about £2 to £3 per head per annum. This roughly indicates the real opportunity cost of a housing programme ; it is hard, but to most people not unbearable. The burden is less noticeable, of course, if as in 1950 real consumption per head is rising.

Urgent as building and housing needs are, their satisfaction is postponable. But the social consequences of such postponement are greatly to be feared. As yet too little is known factually about the link between bad housing and other social evils such as disease and delinquency, except that several separate studies have confirmed the *a priori* supposition that the link is close. And both slum houses and slum factories are bound to come into existence rather than disappear if there is any substantial postponement of building. The job to be done is in this sense urgent.

III. The Market for the Industry's Product.

The internal organisation of the industry is bound up with the procedures whereby work is undertaken by the private competitive firms that make up the industry. The clients who want work done for them are known as the "building owners." The methods whereby building owners come to terms with building contractors are various, but there has been a growing

tendency over the last thirty years towards a greater uniformity of procedure in respect of the larger contracts.

For example, the "Standard Form of Building Contract" issued in 1939 under the sanction of the Royal Institute of British Architects and the National Federation of Building Trades' Employers is more widely used. This standard form was a development of an earlier form first issued in 1909 and modified in 1931.

Competitive tendering has, moreover, become the method of letting contracts *par excellence*, because of the historical environment in which business has been done. This form of competition has seemed to afford the only practical form of check on efficiency from the point of view in particular of public "building owners" (local authorities or Government Departments), and their example has been widely followed. Mr. Bevan, as Minister of Health, gave an interesting account in one of the housing debates of his efforts to "discipline the industry," as he called it, in the winter of 1945 and the spring of 1946. He said [1] of his efforts in that period :

> "I was taunted by Members of the Opposition, who enquired how on earth I could expect to build houses by turning down tenders which were too high. Of course I could do it. I could do it because we could not build houses anyway then as we had no materials. Therefore, I could spend the time usefully educating the industry back into good practices. I remember very well that one of my chief difficulties was to try and get this principle of competitive tendering established. Members will recall that the builders had formed themselves into ring after ring all over the country, insisting I should agree to prices which were exorbitant." He advised Manchester to invite prices for pre-fabricated houses. "Manchester have not got these pre-fabricated tenders yet, but we broke the ring. That happened all over the country."

This extract deserves study from several points of view. Whether the high price of tenders was due solely to the ring, and whether Mr. Bevan's policy broke it, can hardly be

[1] 475 *House of Commons Debates*, Col. 1780, 22nd May, 1950.

independently judged without access to highly confidential information. But there can be no dispute as to Mr. Bevan's plain revelation of the purposes that he intended, or of the official policy designed for those ends.

The official policy was aiming at the "restoration" of competitive tendering. It was therefore in direct contradiction to any idea of rationalising the industry in the direction proposed, for instance, by the advocates of an extension of the London builders' pool. Sufficient trust in the safeguards alleged to be embodied in that scheme did not exist, rightly or wrongly, in the official mind. Despite, or because of, war-time experiences in letting building contracts without full competitive tendering, post-war official policy was a direct reversal of war-time procedure.

Any internal reorganisation of the industry is conditioned by such historical factors as the deeply entrenched faith of public authorities in the virtues of competitive tendering. The arguments *against* competitive tendering have been forcibly put time and again by representatives of the industry itself, especially when justifying the procedure of the London pool. The arguments are familiar to economists in that they follow the usual pattern of protesting against "cut-throat" and what the Americans would call "unethical" price reductions. This must follow inevitably from a procedure of really free competitive bidding, in which the bids are unknown to all the parties concerned, for the necessity of each builder to keep his plant fully occupied must tend to make him prepared to "buy" a contract whenever there is a threat of some general reduction in demand. Another objection to competitive tendering is the wasted effort involved in preparing voluminous estimates, which collectively add appreciably to the cost paid by the building owner (since each contractor must on average cover these costs in his overheads).

If, despite these objections, the official building owner still clings to competitive tendering (which in fact survives largely because it is no longer genuinely and fully competitive) the reason is that no alternative system has yet been devised that readily gives the apparent objectivity of standards implied.

The forms of contract now commonly in use embody the present practices of the industry, and the existing relations between the building owner, the architect, the contractor and the quantity surveyor. The forms vary, but the R.I.B.A. standard form is now fairly typical. The principles of the Standard Form are two-fold. First, the architect, as agent for the building owner, is vested with the control of the actual execution of the work contracted to be done, an investiture that gives the architect almost autocratic powers on the site ; and secondly, there are wide remedies as to compensation and the like vested in the contractor.

It is very important to grasp the significance of this dual relationship, for the present efficiency and future organisation of the industry depend upon whether it can in practice be amended. To give one simple example, progress in the reduction of building costs would be assisted in the view of most investigators if more exact data on past contracts were available for analysis. Indeed, the very *theory* of the priced Bills of Quantities from which tenders are built up in the first place is that estimators have available to them adequate records of the costs previously experienced in similar kinds of work. Yet in the legal sense all the contract documents are obligatorily confidential, and may not be used or divulged by the building owner, the architect or the surveyor except for the purposes of the contract itself. There are certain possibilities of fraud against which this clause is directed, and no doubt it is sometimes quietly ignored ; nevertheless it must inhibit the systematic pooling of experience.

The existing form of contract imposes and entails a considerable burden of clerical work upon the parties to a contract, the main purpose of the standard form being to hold the balance as between the architect and the contractor. The paper-work is required to safeguard the contractor from possible loss in view of the wide discretionary powers vested in the architect. The consequence of this system is that far too much energy is devoted to establishing or repudiating claims, and too little to techniques of progressing, and direct controls of costs.

An alternative system, suggested by some American practice, is to divert the paper-work to two different stages of a contract—one being a stage earlier and the other later than the date of tendering. On this plan, much greater obligations would be imposed upon the architect in the matter of producing exact and precise drawings at a very early date ("pre-planning") and similarly more emphasis would be placed upon controlling and recording progress than upon the measurement and pricing of variations. On the basis of this system, which would imply a complete revolution in the practice of British architects and builders, firm price contracts would become more usual ; and, while in some cases competitive tendering would still be practised, more contracts would be lettable to nominated contractors. The yardsticks against which their performance could be measured would be available to all, if some system of filing records were imposed as an obligation on all firms, and these records would normally be kept on all major contracts.

Any reform must be gradual, but it may still be painful, at least to some existing interests. For example, it might work out that under a system of nominated contractors "national" building firms with a good cost record would be able to quote a low firm price on the basis of the architect's detailed drawings. Moreover, once such a national firm had established itself in a locality, the best plan might be for it to receive continuous work there. Such a policy would be vigorously opposed locally. Any attempt to "organise the market" on these or on any other lines, will encounter opposition.

Difficulties of this kind can only be overcome if the social advantage of reduced building costs is constantly publicised. To save 4% on £800 millions is a saving of £32 millions a year ; and the country can well afford £1 million to spend on cost research and publicity (in 1948/49 it actually spent just over £1 million, but more than half of this was recoverable expenditure ; and since that year the research programme appears to have been reduced). Costs can be reduced if (*a*) demand is canalised through few enough channels, *i.e.* if the market is organised, (*b*) architects are prepared (and

trained) to take on the much greater responsibility implied, (*c*) the number of firms in the industry is ruthlessly reduced by the frequent publication of cost figures, etc., making it impossible for high cost firms to survive, (*d*) standardisation is continually applied to materials and components.

Not much has yet been said to support conclusions (*c*) and (*d*), and it will be useful at this stage to review the circumstantial evidence in their favour.

IV. The Structure of the Industry.

Two facts about the industry are widely known—that it is composed of a very large number of firms, most of them very small, and that building costs are "too high." Both these facts need some elucidation.

The mere existence of a large number of small units in any industry is not in itself proof of the backwardness or inefficiency of that industry. Criticism of the large numbers of firms in the industry arises because of the second "fact"—or firmly held belief—that costs ought not to be so high. If, for example, building costs had declined (absolutely, or in a marked degree, relative to other prices) since 1945, little would have been heard about the alleged inefficiency of the small firms. *Per contra* those who defend the present structure of the industry tend to omit any discussion of high costs, or to blame them on to Government controls and low labour productivity.

When it is stated that there "are" large numbers of small firms in the industry the statement gives the wrong picture, for the firms are not the same from one year to the next. The rate of turnover of firms is very large. For example, in October, 1943, there were 40,000 firms in the industry employing one or more operatives, and 27,200 with no operatives at all. By May, 1947, there were no less than 70,500 operative-employing firms and 60,500 registered but with no operatives, a total of some 131,000 firms in all.

The rapidity with which the number of firms in the industry can grow is well illustrated by the fact that there was a *net* increase of 22,500 firms between November, 1945 and

November, 1946, a year of exceptional expansion. In 1947 and 1948, the rate of growth slowed down, and during 1949 the number of firms declined (by some 3·7%).

Even the figures of net increase or decrease in the number of firms fail to convey, however, a full picture of the instability of life of the average small-sized building firm. There is a constant turnover of firms. From the available statistics it would appear that firms disappeared from the industry at the rate of about 1,000 in each month in 1945-46, and of over 1,500 a month in 1946-47. These are only rough estimates, but they are accurate enough to illustrate the point that withdrawals from the industry are very high indeed even at times when its activity is increasing.

The high turnover rate of firms is undoubtedly a reflection of the ease with which the industry can be entered, and of the low capitalisation of the industry.

The nil-operative firms, already mentioned, form a peculiar category. A nil-operative firm is one which declares itself to employ no operatives at the date to which the return refers (all statistics on building firms since 1941 being derived from compulsory returns made by registered firms at intervals to the Ministry of Works). Many of these very small units include "working principals"; they are, in fact, firms started up by a working bricklayer or painter (or handyman) on his own account. The kinds of repair jobs needing to be done (and sometimes even done illegally) in the two immediate post-war years were particularly suitable for the one-man firm, and, further, the abolition as from March, 1946, of all legal restrictions on entry into the industry undammed a flood of new entrants. Legal restrictions on incentive payments to employed workers, then still imposed, were also conducive to diverting business to the small firm (whose proprietor could work for a higher rate than the permitted wage).

Very large numbers of firms employ only one or two operatives, a large number employ from 3-5 operatives, and still a considerable number (18,000 in 1946, for example) is to be found in the 6-19 operative class. Nevertheless if the three smallest size-groups of firms (with 1-2, 3-5 and 6-19

operatives) are all taken together, though they include 86·9% of all firms in the industry they jointly employ only 30·1% of the labour.

There have been rapid adjustments in the numbers of firms in the different size-groups, all up and down the scale. For example, between 1943 and 1946 the numbers of firms in the 6-19 operatives class nearly doubled, and in the 20-99 employing class it *more* than doubled (from 3,402 to 7,756). In the war years the *very* large firms (those with 1,000 operatives or more) significantly increased their absolute, and still more, their relative importance in the industry.

The industry is thus immensely flexible, if by this word is meant adaptable to rapid changes in the employment situation, and in the volume of work done (or permitted to be done). This capacity for adjustment is made up of two different factors, ease of entry and speed of exit, on the one hand, and of the capacity of individual firms to expand or to contract on the other. The net result is that not only the size, but the pattern of the industry's employment may be changed profoundly from one year to the next.

Flexibility is itself an advantage ; but not a sufficiently overwhelming advantage to outweigh all other considerations. The present adaptability of the industry has to be measured against the *required* adaptability.

Since the *output* of the industry includes *all* works of construction, as defined above, the range of size and type of jobs is extremely large. Considerable variations in the size of firm are for this reason an economic advantage. To work out, even very roughly, the required size-distribution of firms it would be necessary to know just what sizes of firms could tackle the different-sized jobs, and how many jobs of different sizes there are. Unfortunately both these items of information are missing.

It is, however, possible to divide the contracts let in some post-war years into broad categories by size. In 1946, for instance, work begun can be analysed roughly as follows :—

	Number of contracts let in 1946.
Ministry of Works Licences.	
Work over £100	237,000
Maintenance Licences	100,000
Local Authorities' Licences or approvals.	
New housing	20,000 — 25,000
Non-housing £10 — £100	325,000
Housing repairs, etc.	1,100,000
	1,782,000 — 1,787,000

to which must be added an unknown number (perhaps 2 or 3 millions) of jobs done worth less than £10 each.

There are many complications in the interpretation of these figures (for instance some of the licences refer to work done "outside the industry") but these can be ignored, as they give a broadly correct picture of the kind of work that the industry has to do. Work of less than £10 in value, annually a substantial figure, and the £80 millions devoted in 1946 to repairs, maintenance and conversions (it was higher than this in the years 1948-1950) could well be left to the small and medium-sized builders, that is to those with no more than 19 operatives employed. This would leave them several million jobs a year, and support a substantial labour force in regular employment. Next, there would be the 325,000 or so jobs a year of non-housing works, valued (in 1946) between £10 and £100 each. Supposing that these jobs had been shared out equally between all employers of 6-19 operatives, this would work out at about 18 contracts apiece, the average value of each contract being about £50. (Of course such arithmetically equal sharing is not proposed as a practical policy, but worked out to show that on average there would be enough work for each firm). Some of these jobs might even be done by smaller firms, those with 1-5 operatives employed, the remaining jobs in this category going to rather fewer firms than then existed in the 6-19 class.

Supposing, then, that all the smaller contracts described above went to the small and medium-sized builders (*i.e.* those employing 1-19 operatives). If an average turnover for these firms in 1946 might be assumed of some £4,000, the total

number of firms required would have been 35,500. Actually there were about 60,000.

Supposing, again, that all the houses for which contracts were let in 1946 had been grouped into 100 house blocks (not necessarily built close to each other, but on scattered sites as required), and suppose further that it had been deemed efficient for each large firm to take, on an average, five housing contracts in a year (10 might be more economical if the firms were really large-scale). In these circumstances, some 2,850 contracts would have had to be let among 570 contractors. The actual number of contractors engaged on local authority house erection in 1949 was stated to be 5,200.[1]

Proposals for rationalising the building industry do not mean proposals for abolishing the small and medium-sized firm. There is now, and will be in the future, a vast field of enterprise in which small units can operate efficiently. But small and medium-sized firms are brought into new building work too often, and the threat that they may come in provides that cut-throat competition of which the large firms rightly complain. They are often under-equipped, and too many of them are backward in their techniques. The existence of such a large floating army of firms puts them financially at the mercy of the well-organised rings of materials' producers.

But what about the craft structure of the industry? Does not any proposal to rationalise its organisation threaten the ancient and honourable crafts?

It is, indeed, true that small firms count among their operatives a bigger proportion of craftsmen than do large firms. Thus the "unskilled" employed by firms with two operatives amount to only 21%, while firms with 5,000 operatives or more employed 81% of these (*i.e.* those without a named traditional building skill).

But the share of the small firms (those with from 2-5 operatives in this case)[2] varied between one craft and another. They had more than the average of plumbers and glaziers, masons and slaters and tilers, about the average percentage

[1] *House of Commons Debates*, 30th June, 1949.

[2] Since 1-operative firms are differently situated in this respect.

of carpenters and joiners and electricians, and *less* than their share of bricklayers and of "other" building and civil engineering craftsmen.

The 6-19 size-group showed a different pattern, with a specially great excess above the average with slaters and tilers, and a slight excess with bricklayers, and carpenters and joiners. The 20-99 size-group did exceptionally well in plasterers, electricians, bricklayers and painters. The 100-499 size-group climbed ahead with bricklayers and carpenters and joiners; the 500-4,999 size-group had a notable relative superiority in "other" craftsmen and in unskilled, while the 5,000 and over group was superior in unskilled workers only.

This pattern of employment can partly be explained by the fact that "the industry" includes certain specialist firms, for instance slaters and tilers, or carpenters and joiners. Four traditional crafts were moreover heavily concentrated not merely in firms employing less than 500 operatives, but below the 100-operative level. These were slaters and tilers, plasterers, painters, and plumbers and glaziers. None of these crafts had more than 20% of their total numbers in the employ of firms with over 100 operatives, while 38% of *all* operatives were in such employ.

If *firms* in the industry are divided into trades the leading two groups are General Builders, and Building and Civil Engineering Contractors. These two groups employed 85% of carpenters and joiners in the industry (despite the existence of large numbers of small specialist carpentry and joinery firms), and an even higher percentage, 97%, of all the bricklayers.

The really important point is, indeed, the fact that the bricklayers stand out as the one craft mainly monopolised as it were by these two leading groups of firms. In November, 1946, there were 42,331 such firms (with operatives). The bricklayers employed by these firms number 104,642. Thus, for them there was an average ratio of 2½ bricklayers per firm. The remaining 26,803 firms in the industry had a little over one bricklayer to ten firms.

The General Builders, and Building and Civil Engineering Contractors, were strong in the three oldest crafts in the industry, but slightly below average strength in the newer crafts (firms engaged purely on Civil Engineering are excluded here). They held a substantial, but progressively decreasing share of the painters, plasterers, electricians, slaters and tilers and plumbers and glaziers.

The Civil Engineering trade group, though it accounted for less than 4% of the industry's employment, had 10% of the "other" building and civil engineering craftsmen, that is fitters, pipe jointers, timbermen, etc.

Cutting down the small firms would to some extent militate against the old crafts, but it would encourage the new. What judgment is made on the final result depends considerably on what view is taken of the term "skill." The new skills are connected with new methods of construction. The building industry "proper" (that is the first two trade groups mentioned above) is particularly closely connected with traditional brick building, or so the statistics suggest, and continued pressure from the building owner—and organisation of the building owner—is necessary if new methods are to be adopted.

A rationalisation of the industry would not abolish bricklaying, or traditional building; indeed, the better organisation of the letting of contracts should improve the traditional skills and raise their average standard. The rationalisation of the industry should be accompanied by much more intensive compaigns both to train and to educate the skilled in both the old and the new spheres, and would promote continuity of work.

The present high cost of building houses (relative to the rents that people can afford) is neither a new phenomenon, nor confined to this country. It cannot therefore be blamed wholly upon the alleged low productivity of the British worker. If that productivity was specially low in 1946 (it is said to have recovered since) that would, of course, have aggravated the problem. But *relatively* the position does not seem to have changed so very drastically over the years. When the

conscience of the public (to use a metaphor) was first stirred on the subject, that is during the first World War, a famous Commission [1] reported that :—

> "In our inquiries before the war (of 1914) we obtained a considerable amount of evidence to the effect that Public Authorities would require to provide housing for the working-classes. This evidence was based upon the pre-war figures of costs and rate of interest. That it was impossible at these figures, as a commercial undertaking, to put up a house of three rooms and all ordinary accessories for some years prior to the war cannot be gainsaid."

These remarks were made in respect to Scotland, but there is no evidence that the English position was much better. According to various estimates a house in Scotland's industrial areas of not less than three rooms "with all sanitary and domestic conveniences" (of 1914 standards of course) cost from £275-£300 in July, 1914. Wages per hour rose by almost 100% between 1914 and 1938, and materials also by some 100%.[2] These figures suggest that the 1914 type house of only 600-700 ft. super would have cost about £450-£600 in 1938. But the Laidlaw Committee [3] estimated that the final cost of a 4 apartment traditional house in Scotland in 1939 averaged about £480. On this reckoning labour productivity cannot have been much different in 1939 from what it was in 1914. A similar comparison shows that labour productivity in 1949 was not very far below the 1939 figure.

The cost of housing relative to other things reflects not only supply conditions but demand conditions. This obvious economic fact is lost sight of far too often in any discussion of

[1] *The Royal Commission on the Housing of the Industrial Population in Scotland*, Cmd. 8731 (1917).

[2] For wage-rates see rates for bricklayers in London, in A. L. Bowley's "Wages, Earnings and Hours of Work, 1914-47, United Kingdom," *London and Cambridge Economic Service*, Special Memorandum, No. 50, May, 1947, p. 6, and for materials, J. Saville's "Index of Materials' prices for 1910-1914," *Yorkshire Bulletin of Economic and Social Research*, Vol. I, No. 2, September, 1949.

[3] Laidlaw Committee for Scotland, *Scottish Building Costs*, Edinburgh, H.M.S.O., 1948.

building costs. To examine such matters as labour productivity and *not* to examine profit margins, and alternative uses of the factors of production, is bound to lead to inconclusive results in periods when the economy is under constant inflationary pressure.

The structure of the industry is so flexible that it could readily be adjusted to drastic reforms on the lines of points (*a*) to (*d*) mentioned in the preceding section. The canalization of demand would perhaps lead to more business going to larger firms. In the last war these firms grew at an enormous pace, and though there were weaknesses here and there, there was no breakdown in their organisation. A true competitiveness was retained without the cumbersome tendering system in its peace-time form, since the progress of all contracts was recorded, and the Government as nearly sole "building owner" placed its contracts largely on the basis of past performance. There is no intrinsic economic reason why the same principles should not be applied in peace-time to the purchase of publicly subsidised housing, and of many other buildings including factories and institutional establishments. But for this, some form of regional buying, or area buying, organisation would have to be set up and efficiently operated.

Without such organisation of demand the application of the principles of the industrial revolution to the building industry will come much more slowly. The complete collapse in England and Wales of the pre-fabrication programme in the last three years is the sad climax to the disregard of these economic principles. Several large firms indulged in pre-fabrication after the war, in view of the Government's interest in this development. But the costs did not come down. Why should any promoter charge less than the going price for a new pre-fabricated house, when the alternative use of his factory for making lamp-posts or paving-stones would bring in as good a profit as if he charged that price? So until the Government

controls the buying side of the industry,[1] no new methods are likely to be extensively used. Yet the scientific, industrial and technical reasons for supposing that several (not all) of the experimental houses ought to be kept in production are completely convincing.

Five years ago Britain was leading the world in many new developments in the building field, and architects and builders from other countries were anxious to visit us and see our methods. This is still true of some of our best local authority housing estates, and of some of our new schools and other buildings. But the economic problem has not been sufficiently solved, and this country is certainly no longer in the van. The scientific and applied scientific work done has been mainly pigeon-holed, and instead of leading the world technically we are rapidly falling behind. A new impulse to reduce costs will be given by the stringent economic conditions of 1951. Let it be hoped that this impulse will be followed through beyond the committee and blue-print stage, by administrators who are prepared to take some serious experimental risks, and to administer a controlled demand for building. For there is, no doubt, that standardised units could be used progressively to reduce (or slow the advance of) building costs, provided only that there is a large-scale market for standard products supported firmly by public funds.

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[1]The size of an "economic" order for non-traditional houses is not necessarily very high, but it is of necessity very steady. Some factories could turn out houses cheaply enough if they were sure of an order of 50 houses a week, as far as technique is concerned. Only publicly organised demand could (*a*) guarantee a steady market and (*b*) ensure the necessary allocation of resources—in conditions of inflationary profit margins.

The Economic Development of the Highlands

Historically, the problem of the Scottish Highlands [1] has been one of over-population. Manpower was the key to the strength of the clan system, land poverty the key to its weakness. When it collapsed, after the 1745 Rebellion, the story of the Highlands became the question whether starvation or emigration would reduce the excess of population, for most efforts to introduce new forms of employment to the area quickly failed. The displacement of arable farming and cattle breeding by large-scale sheep farming in the 1770's hastened both processes, for many emigrated to the new industrial centres in the Lowlands or to the new countries, or joined the army, while many more settled along the Highland coasts. protected from starvation mainly by the uncertain potato crops and the unstable kelp industry. By the middle of the 19th century, the natural increase of population was no longer enough to offset the annual outward balance of migration, and the total population declined steadily from an estimated peak of 396,000 in 1841 to about 293,000 in 1931.

The rate of decrease then decelerated, largely because world-wide economic depression reduced the incentive to emigrate, and the total population has been fairly stable since the end of the 1930's. It was officially estimated at 296,000 in June, 1949. Since the end of the Second World War, the resumption of emigration has been offset partly by immigration and partly by the rise in the birth-rate. But the Highlands now contain only about 5% of the total population of Scotland, as against about 20% in the 50 years after the 1745 Rebellion. Moreover, except for the burgh of Inverness (population 26,600 in 1947)—the only town with over 10,000 inhabitants in the region—the proportion of population aged over 65 is significantly larger, and that between 15 and 44 smaller, than

[1]Throughout this article the term "Highlands" refers to the seven "crofting counties," Argyll, Inverness, Ross and Cromarty, Sutherland, Caithness, Orkney, Zetland.

the corresponding proportions for Scotland as a whole. In some areas, the number of children is distressingly small. It is probable many districts will have to be evacuated within the next generation or so, and this is certain, if emigration is resumed on the scale of the 1920's.

At first sight, therefore, the problem might appear to be one of a deficiency of labour relative to land. But in this vast region a large part of the total area is useless because of geological factors, neglect of capital investment, and lack of enterprise, and the problem is one of scarcity of land and above all of capital and enterprise, relative even to the small labour supply. The surplus labour force will remain unproductive unless the deficiency of capital is made good, but any further reduction of population will more than proportionately reduce the output of the region, and destroy the social and economic basis of the community. Primarily, new capital must take the form of communications and services (like water supply, drainage, sanitation, light) and the deficiency in enterprise must be made good by the State: the prospects of secondary development might then attract the interest of private entrepreneurs both inside and outside the region, especially since the efficiency of labour is potentially very high.

An important stage in the long history of public interest in the Highland problem was reached with the publication in July, 1950 of a White Paper entitled: "A Programme of Highland Development" (Cmd. 7976). Explicit in this document is the Labour Government's claim to have initiated a more constructive policy than has been open to previous Governments. This policy is based on the judgment that new factors make the old problem more amenable to treatment by economic methods than before. The new factors are cited as "the increased importance of home food production, the necessity for a large-scale programme of afforestation, the development of hydro-electric power in the Highlands, and the increased importance of the tourist trade." It is proposed in this article to examine some of the implications of these factors, confining attention to the main general issues. The

statistical approach has been deliberately eschewed to keep the discussion on broad lines.[1]

If the broad lines of *national* policy are taken as given, the particular questions which arise about the policy for the Highlands are :—(1) whether it is feasible to produce more food in the region, at a cost to the consumer/taxpayer no higher than the cost of subsidising increased food production elsewhere ; (2) whether, at the same time, the re-afforestation of the region is possible, and compatible with the most economic utilisation of the land ; (3) whether the water-power of the region is adequate to meet the needs of new electro-technical industries, besides encouraging the introduction of other industries ; and (4) whether the Highlands can attract more tourists, especially from hard currency countries.

The problem of Crofting lies at the root of the first question. Some parts of the Highland counties are cultivated in fair-sized commercial farm units—*e.g.* Easter Ross, where the land is fertile, and the climate good, and normal arable farming is efficient and profitable. But over the greater part of the region agriculture is conducted by crofters. A croft can be defined as a small-holding grouped along with several neighbouring small-holdings into a crofting "township," with grazing rights held in common over an outlying area of hill pasture. Originally each croft was an independent unit, but now the

[1]The problem has been neglected by economists, though much has been written on it by others. Its discussion is too often complicated by the intrusion of sentiment. Perhaps the best source of published information is still the "Hilleary Report" issued by the Scottish Economic Committee in 1938, and now out of print. The writer understands that Dr. Fraser Darling's "West Highland Survey" is nearing completion. When it is published it should go far towards filling the gap in the literature on the subject. In the last few years Government departments and semi-official bodies like the Highlands Advisory Panel have carried out comprehensive surveys of different areas and problems, but Cmd. 7976 is all that has been revealed to the public.

total number of over 20,000 crofts in the six[1] counties of Argyll, Inverness, Ross and Cromarty, Sutherland, Caithness and Zetland is farmed by a much smaller number of crofters. There is no hope of the system employing a larger population in farming alone. All the evidence is that present methods are inefficient because the units are too small in arable acreage. The crofter with 2-10 arable acres (the present typical size of holding), handicapped by disproportionate overheads and high marketing costs, gets a smaller yield than the large-scale farmer on better soil in easier climatic conditions, and can only compete economically if he learns to specialise on intensive production of high-grade foods, like vegetables, fruit, honey, or even perhaps bacon. If alternative employments could be introduced to crofting townships, better land utilisation would result from redistribution of the land of the smaller holdings[2] to specialist cultivators growing, *e.g.* first-class seed potatoes, or virus-free raspberry canes or strawberry-runners for sale to fruit-growers nearer the big markets. The incidence of high transport and marketing costs would be reduced by high prices for specialist products, and by co-operative organisation, *e.g.* of egg hatcheries and egg poultry grading stations. These are still strange concepts to the individualistic Highlander (outside Orkney)—yet he is a neighbourly fellow, and within the limits of convention, a willing helper of his fellow-crofter at harvest time and on other occasions. But he is, often very

[1]cf. Report of Dept. of Agriculature for Scotland : "Scotland's Marginal Farms ; Regional Report vi : The Highlands," 1947. Conditions in the Orkneys are somewhat different, partly because after the 1911 Small Landholders' (Scotland) Act many proprietors sold their land to their tenants, and there is now a much higher proportion of owner-occupancy than in the other crofting countries. This partly explains the greater vigour and enterprise which distinguish Orcadian farming, although other factors are also important. Among these are low rainfall and easily drained soil ; the acquisition of the best farming techniques from the immigration of Aberdeenshire farmers in the 19th century ; and the stimulus of a big local market in war-time, when the population trebled.

[2]This would, of course, call for a major reform of crofting law, which tends to perpetuate the Gladstone Government's decision (in 1886), to give security of tenure even in holdings which were too small to be economic even then. In many areas the ratio of tillage to arable land is as low as 1:6. So long as land is left under grass, it is presumed not to be deteriorating, and there is no eviction.

rightly, sceptical of "improvers," because they sometimes fail to realise the extraordinary differences in local conditions—due often to geological factors—even between townships quite close together, and wrongly prescribe a single medicine for what are really different ills.

Strangers to the Highlands do not always understand the importance placed on the philosophic value of certain ways of life, which are not in the best economic interests of the people. This is often called Highland sentimentality, or even laziness ; but who is to say that the Lewis man is wrong when he rejects the grand schemes of a Leverhulme [1] because he does not *want* the things which seem important to "those unfortunate people who live in smoky towns," but prefers freedom and independence, "to rest and contemplate," after the seed-time and the harvest, and when the fishing season is over, in the homes which the English captain of industry called "hovels ?" Nevertheless, the lessons in elementary economics and farming technique which the crofter has to learn are quite clear, and there is evidence that they are being learned, and would be more quickly learned if there were more "demonstration

[1]It is interesting to reflect that, almost at the same time as Lord Leverhulme was making his attempt to develop Lewis, mainly on the basis of its fishing industry, Mr. Henry Ford was making a bid to take over war-time industrial plant in the Tennessee Valley. Had his offer been accepted, he would have become responsible for the general economic development of the area, in much the same way as Leverhulme would have been responsible for Lewis. But his bid was rejected by the United States' Government. Professor H. Finer gives two interesting reasons in his study : *The T.V.A. : Lessons for International Application.* The return he was to get for his investment was felt to be an excessive share of the resources of the region ; and while Ford might succeed in the responsibility for such a large undertaking, there was no guarantee that his unknown successors could equally be trusted with the care of vast social capital. The American Government's decision was one of the reasons for the subsequent creation of the Tennessee Valley Authority. The rebuff of Leverhulme by the men of Lewis could be justified on very similar grounds—but there is still no complete assumption of the responsibility by the State. Ironically, Leverhulme failed because he was stubbornly correct about crofting. Holding that small-unit farming was uneconomic, he refused to grant land for new holdings to demobilised islanders. Still more ironically, some of the industrial projects now being sponsored in the area by the Herring Industry Board and by other Government agencies closely resemble the original Leverhulme schemes—and even make use of buildings which he caused to be erected !

crofts," not over-capitalised, and run as models by the Department of Agriculture.

Taking Highland agriculture as a whole one may argue that its chief advantage to the country lies in its output of livestock and livestock products. While the crofting counties contain 47% of the total surface area of Scotland, they contain only 13% of the arable land, in widely scattered parcels often separated by high mountain masses with poor communications. On the other hand, they contain 64% of the mountain and heath land which is potential grazing for livestock. The question is whether these wide open spaces cannot be better stocked to make up part of the deficiency of our meat diet. They can be used for breeding more sheep ; for feeding more cattle ; for growing more trees ; for providing sport for hunters of deer. While these uses are not mutually exclusive, they are to a large degree competitive. Much of this land is hardly usable for any economic purpose ; the siting of roads and scant provision of essential community services limit the radius of areas which are usable. The extension of sheep farming is hindered by the difficulty of finding skilled shepherds. Afforestation meets the same rather paradoxical labour handicap. Both cattle breeding and sheep breeding are limited by lack of winter keep. Dams and other interferences with the natural terrain in connection with hydro-electric schemes often put out of agricultural use many acres of the best pasture lands, previously available for winter grazing.

The economist thus finds that, instead of dealing with a situation in which relative abundance of land is the ruling factor, he is faced with a relative scarcity of land, without much help from the findings of the technicians to equip him to determine the best of alternative competing uses. It may be true that "where a good tree can grow, a sheep can graze," but what will be the relation between timber, mutton and wool prices over the next 60 years—the period necessary to mature timber ? Is it legitimate to assume a continuing meat crisis ? Is it likely to be easier or more feasible in a future war to import mutton and beef than to import timber ? Is it reasonable to assume a constant return from hill soil over 60 years'

grazing by endlessly nibbling sheep? Would a higher ratio of cattle to sheep not keep the soil in better heart?

The solution must vary from district to district, and depends largely on the availability of winter keep, while manufactured feeding-stuffs remain scarce and specially costly to transport to remote Highland areas. Better grass management, using local lime, shellsand, and seaweed as fertilisers, and improved methods of grass-drying and silage-making, which are being adapted to Highland conditions, should greatly increase the stock-carrying capacity of the region.[1]

The exploitation of the forests of the region in two wars [2] furnishes a clear case for State investment, especially since the economic consequences of these wars have made it difficult for estate owners to find the capital needed for rehabilitation of the felled areas. It is generally agreed that forestry planning requires a longer and wider view than individual landowners can take, and it is through the afforestation programme that the problem of absentee ownership can probably be tackled most easily. Forestry work is suited to Highland labour, and it is a positive advantage that in the early stages, before thinning

[1]cf. *e.g.* the report by Professor Stapledon, Appendix vi of the Hilleary Report, pp. 200-203, and "Crofting Agriculture" by Dr. Fraser Darling. The humid atmosphere of the West requires electrical treatment of the air before it is passed through the hay, but a suitable grass-dryer has now been designed and could perhaps be part of the co-operatively-owned-and-operated equipment of the larger townships.

[2]It is estimated that there are 350,000-400,000 acres of woodland in the Highlands. At least 50,000 acres were felled in each of the two wars, and continued exploitation in the inter-war period prevented any recovery between 1918 and 1939. Perhaps one-third of the total woodland area now represents high forest. Besides restoration of tne whole of this area, Forestry policy aims at approximately doubling the woodlands area of the Highlands by new planting on bare ground. Experience of German forestry management indicates that after 50-60 years the total area should give direct employment in the woods to about 7,500 men, and indirect employment (in transport, sawmills, etc.) to a much larger figure. The total of indirect employment depends on how far finishing processes are carried through locally. Already well over 2,000 men are working in the woods, and in the Highland Development Area the industrial group "sawmilling, woodworking, etc." comes sixth from the top of the list of industrial groups providing most employment. (The first five in order of importance are :—Farming, Forestry, etc.; Distribution; Government Service; Hotels, Catering, etc.; Building).

of the plantations begins, the number of men employed is small, for the surplus labour of the region is widely scattered and not readily mobile, and it is proving difficult to build even the relatively few houses which the Forestry Commission need. But their small, well-sited forestry workers' "colonies," equipped with basic services and good communications, should be ideal nuclei for the larger new villages of the future, with employment available in timber-extracting and possibly in wood-finishing industries, as well as in other light industries suited to the region. Among problems to be solved is again the somewhat paradoxical one of the shortage of labour for which forestry and agriculture compete, often to the detriment of crofting land, for forestry work is usually organised on a full-time basis. But the experiments in the Strathoykel area, where the Department of Agriculture for Scotland, the Forestry Commission, and private estate owners are co-operating, show that compromise between the competing uses of land is practicable and will, in the most suitable areas, increase the output of timber, beef, mutton and wool simultaneously.

If the improvement of agricultural techniques increases output without keeping as many men on the land as there are at present, and re-afforestation does not absorb the whole of the surplus labour force in employment, some localised industrialisation and/or development of the tourist industry will be essential. Economy of transfer costs favours the location in the Highlands of (small-scale) industries concerned with the processing, packing, grading and marketing of the food products of Highland farming and fishing. In these industries the greatest transfer costs are the collection of materials from a large number of small producers. Unfortunately these are often scattered over a wide area, and it is impossible to secure from a smaller area sufficient supplies to justify the overheads of the processing plant. Co-operative bulk buying and selling (as practised in Orkney) would reduce transport costs, and, as internal communications are improved, provided there is strict control over the prices charged by those who have local monopoly of the supply of transport, the prospects of food-processing plants should improve. These

include both canning factories and deep-freezing plants, between which there is competition for supplies and markets. The foods capable of processing include white fish, herring, shell-fish, venison, game, poultry, fruit and vegetables.

The success even of the few plants already established is by no means assured. When—as now—the demand for the fresh product in season is insatiable, the processor has either to pay peak prices to obtain supplies—and involve himself in a loss when the market drops ; or buy second quality products (*e.g.* herring) which ruin the reputation of processed foods ; or operate below capacity for lack of sufficient good quality raw material at reasonable prices. One firm in Inverness helps to meet overheads by canning rhubarb—but has to go to England for supplies ! It will be some years yet before producers realise the possibilities of extending their markets with the help of processors. There is a vicious circle here : from the food producer's point of view, expansion of output depends largely on reaching a market through the success of the food-processor, while from the latter's point of view success depends largely on the expansion of local food production.

Processing costs are often more important in determining location than transfer costs, and it is worth considering the reasons for the otherwise surprising success of some firms which are old-established in the Highlands, for they may attract new firms to the area.

The most advanced work in the United Kingdom in resistance welding is carried out in Inverness. According to most locational tests this firm should be in the Midlands. But the Inverness firm sells such a highly-priced product that it can ignore transport costs—particularly since it has a monopoly of many overseas markets. Two factors seem positively to favour location in Inverness :—

(1) The dependence of the firm on the skill and enterprise of the management, which is "rooted" in the Highlands ;

(2) The local supply of good labour.

The firm originally built and repaired steam drifters, and turned to resistance welding—about which little was known—when the fall in demand for this type of vessel was foreseen in the early 1920's. The choice of an alternative line of development was due simply to the alertness and astuteness of the management, deriving from close study of engineering research —an outstanding example of the true function of the entrepreneur as the innovator. The supply of good labour is based on the attraction of an enterprising local firm to young, intelligent, well-educated Invernessians, who give of their best as a matter of course, and are not so highly organised for restrictive practices as similar labour might be in the more highly industrialised areas. High productivity, the absence of labour disputes, the optimum utilisation of fixed investment, and adaptability to technological change reduce the burden of overheads, justify higher wages, and provide enterprise with the incentive of profit. This evidence that Highland labour is of good quality can be supported by the cases of other firms, especially the woollen mills, which produce high-quality materials, largely for export markets. Their success also is largely due to hard-working and enterprising management "rooted" in the locality.

The lessons that emerge are :—

(1) The labour factor is potentially very favourable.

(2) Highland labour operates best when organised by local enterprise.

(3) Small units have the best chance of finding enough labour and getting maximum productivity.

(4) The best way to overcome the obstacle of distance from the markets is to make a product which has a high selling value relative to its weight, or to locate where it is possible to use sea transport.

The chief snag about labour is that it is scattered and not very mobile locally. Unemployment percentages in the crofting counties were very high in the inter-war years ; even in 1938 Ross and Cromarty had 46·9% of its insured workers unemployed, Caithness and Sutherland 33·8%. Yet this

meant only about 5,000 unemployed, in an enormous area, with poor communications. Many had part-time employment on the family holdings which would prevent their regular attendance at any other work. (They were still eligible for unemployment benefit if they could claim to be available for work in their own remote villages). The only towns of over 5,000 inhabitants where there was a concentration of unemployed men were Wick and Stornoway.

In the same way, there is little surplus labour now available in the Development Area round Inverness and Dingwall, scheduled in March, 1949, under the Distribution of Industry Act. It has been estimated that only about 750 men and 950 women could become available in the area for full-time employment. Even after the major work on the Hydro-electric schemes has been completed in another 3 or 4 years, the numbers of Highlanders released from employment will be small. Most of the labour for these schemes has come from the four big towns of Scotland or from European Voluntary Workers ; though many of the most satisfactory workers have been ex-fishermen from the Moray Firth coast and Highlanders from the West.

It must be concluded that the main attraction of Highland labour will be for the small-scale manufacturer. There are neither enough men for large-scale plants, nor enough houses for immigrants, nor is there sufficient organised building capacity to put them up quickly, even if the local authorities could meet their relatively high cost without special financial assistance. There are very few level sites available for building, and there are shortages of labour in certain skilled building trades, so that it is doubtful if the record of new building since the war reported by Cmd. 7976 could have been much better. *Prima facie*, except in some of the larger towns like Stornoway, Wick and Lerwick, where the decline of the fishing industry has left a typical problem of urban unemployment with "pockets" of 100-300 unemployed men, the industrialisation of the Highlands depends on the creation of

small factory units,[1] employing say from 10 to 50 men and women, and based on the numerous villages of about 300-1,500 inhabitants which are found along the main lines of communication, and especially in the Development Area. There is a larger total reserve of female labour than of male : but it is difficult to tap, because there is no tradition of women working outside their own houses or crofts. This is another reason for hoping that entrepreneurs who understand local conditions will initiate such work. Even in Wick, where the unemployment problem is more like that of the industrial areas of the country, an English hosiery firm has found it difficult to recruit female labour for work on knitting machines in a branch factory, and in 1949 experimented with an "out-work" system. This type of enterprise is well suited to Highland conditions, but its subordination to the firm's main interests in England makes one wonder what would happen if female labour were to become less scarce in the older manufacturing area. The capital equipment involved is easily moved, and without the guarantee of local entrepreneurial interest the test of suitability for Highland development cannot be held to have been satisfied.

The Government's White Paper cites the development of hydro-electric power as one of the major factors making possible their "more constructive" economic policy. It has often been assumed that once the generating stations are operating the development of electro-chemical and electro-metallurgical industries will be automatic. In other countries these industries are located near hydro-electric generating stations, to save the expense of transmitting power over long distances. The burning question, however, is whether Highland electricity will be cheap enough. The power requirements of these industries are enormous, and far beyond the scope of single watersheds in Scotland. Several watersheds therefore have to be linked by aqueducts and tunnels, and a sufficient head of water built up by storage in dams. But the geology

[1]A very interesting article by Mr. J. M. Rollo in *Scottish Agriculture*, April, 1948, describes his success in establishing the light engineering industry in Easdale (population 120, mostly elderly) 16 miles south of Oban. His experience as a pioneer supports many of the arguments I have used.

of the region makes these methods very costly, especially in comparison with the harnessing of waterpower in U.S.A., Canada, Switzerland or Norway, where expensive linkage of watersheds in seldom necessary. The tariff for large-scale industrial users in U.S.A. and Canada was about 0·10d. per unit in 1945, while the lowest *pre-war* costs in Britain were 0·2d. per unit, and the average price charged by the British Electricity Authority for industrial power in 1949-50 was 0·925d. The lowest tariff published by the North of Scotland Hydro-Electric Board in 1950 was 0·55d. per unit high voltage for industrial consumers whose maximum demand is at least 10 kilowatts. Electro-technical industry would probably need a steady 24-hour day load of 30,000 kilowatts (*i.e.* a large proportion of the output of even the biggest of the schemes under construction). There has been no indication of the price the Board is likely to charge this class of consumer, but the capital costs involved have been rising steadily and it seems certain to be higher than 0·2d.[1] This would rule out these industries, unless they are subsidised for strategic reasons, and even then the notorious problem of high labour turnover would remain, as at Kinlochleven. The aluminium factories there and at Foyers are not a good precedent. They are powered from hydro-electric schemes carried through in the inter-war years when the costs of construction were low (though major development then was bitterly and successfully opposed by sporting and other private interests, often not for the best possible reasons). Yet British aluminium production is costly, and, while before the war it was justified by a world scarcity of this essential material, since the war-time expansion of American and Canadian capacity it has been justifiable only by the shortage of dollars. The British Aluminium Co. have been planning to close down the aluminium production at their (smaller) Foyers plant (because of high costs) and to replace

[1]This was one of the reasons why a well-known American firm at the last moment lost interest in a detailed plan to set up a factory for the manufacture of wallboard in Inverness. There were other reasons ; *e.g.* the difficulty of converting profits into dollars, and doubt about the adequacy of supply of raw materials from the forests of the area, in face of competition, as a purchaser, by the National Coal Board.

it with electro-chemical manufacture. It was announced by the Company's chairman in April, 1949, that this plan had been suspended "on account of unexpected difficulties, particularly doubts as to the availability of additional power at economic prices for electro-chemical production from the North of Scotland Hydro Electric Board."

It is worth emphasising how much the prospects of major industrial development in the region depend on technological change. This governs the possibilities of utilisation of mineral resources, through the search for less costly extractive methods, and for ways of dealing economically with impurities, to compensate for high transfer costs. The food processing industries depend partly on the comparatively new techniques of deep-freezing and refrigeration. The number of instances where technical research seems to have reached the threshold of new economic opportunities for the Highlands is genuinely encouraging. For example, seaweed has become essential to a big new chemical industry with many ramifications. It provides basic materials for a variety of industries, including chemicals, textiles, paper, foods, drugs, plastics and inks, as well as being widely used as a fertiliser and for poultry food. The collection and processing of littoral weed employ considerable numbers in the Highlands both part-time and full-time. When the difficulties of harvesting under-water weed (short in the stalk, and growing from an uneven sea-bed) have been solved, the increase in employment in the industry should be considerable.

Great attention is being paid to the possibilities of using peat as a fuel in both open-cycle and closed-cycle gas turbines for the generation of electricity. In its ordinary uses it is not a satisfactory fuel. Fresh-cut peat is 90% water, and because of its bulk and tendency to crumble it is difficult to transport. It has low calorific value. But it covers many square miles of the Highlands and puts these areas out of consideration as agricultural land. For industrial development, only large and accessible bogs could be used, for heavy capital expenditure would be involved in cutting, in transport and in processing. But if research into its use in gas turbines succeeds, this

expenditure could be justified. In an open cycle process the heat given off could be used to dry wet peat, before it is itself used as fuel to drive the plant, and the steam from the drying process could be used with the combustion gases to increase the power of the plant. (v. Cmd. 7937 "Industry and Employment in Scotland, 1949," Sections 254-259). Success with this research would mean :—(1) the reclamation of large areas for agriculture or afforestation, (2) the generation of electricity, often for supply to areas to which the transmission of power from hydro-electric schemes would be expensive, (3) the development of a new branch of engineering (manufacture of specialised gas turbines), (4) the extraction of certain valuable by-products (especially ester wax, a basis for polishes) which are now imported, (5) the direct and indirect increases in local employment in the Highlands.

Schemes like these, and the harnessing of wind-power to make electricity, are no longer beyond the possibility of quick development and are an interesting by-product of the assumption by the State of increasing responsibilities for scientific research and its application to industry.

The problem of transport costs as a hindrance to production is always given a central place in discussion of the Highland problem. One result of the improvement of communications should be a fall in the cost of transport. This should allow a widening of the market for local producers, and pave the way for the higher degree of specialisation in agriculture and other activities which we have held to be desirable. But cheaper transport also means greater inter-regional trade, and greater exposure of the Highland producer to the competition of well-established specialised producers in other parts of the country. Bread, baked in factories in Glasgow, is despatched in cellophane wrapping to remote villages in the Highlands, to the detriment of the local baker. Cheaper transport is good when it breaks down monopolies which have bred inefficiency, but those who plead indiscriminately for "flat rates of transport" for the benefit of the Highlands should consider whether the acceptance of the principle does not involve its enforcement also in favour of English merchants despatching

goods to the Highlands, at the expense of local producers and retailers who now command at least their village market.

Statistical data for an analysis of the transport problem in relation to the Highland area probably could be made available only as a result of costly investigation by the Transport Commission itself. Common sense, however, indicates that Highland transport users get their rail transport below its true economic cost, for the volume of traffic on Highland railways is almost certainly less than required to meet overhead costs. The real cost of transporting a theoretical unit of goods on Highland routes is much higher than the real cost of transporting the same unit on routes of greater traffic density. (The actual burden of overheads in the Highlands is probably higher per ton-mile because of their topographical difficulties for railway engineering, while there are many more miles of track to maintain per unit of traffic carried). Yet it might be argued that the rates classification system followed by British railways is unfavourable to location of industry in the Highlands. Bulky raw materials, like timber or raw wool, are low in the classification list and are therefore carried at a relatively low rate per ton-mile, and their processing tends to be oriented to the markets where the finished product is consumed. The imports of the Highlands, in the form largely of consumer goods, tend to come high in the classification, and therefore to be charged a higher per ton-mile rate, the incidence of which falls mostly on the Highland consumer. On the other hand, Highland producers are less likely to be able to negotiate "exceptional rates," or "agreed charges," which are less than standard rates, partly because they have only a small volume of regular traffic to offer and therefore poor bargaining power relative to consigners of a heavier volume of traffic, and partly because the railways have had less reason to cut their rates because of competition from road hauliers—which is fiercest over shorter distances. The "flat rates" or "agreed charges" that do exist enable English merchants to sell wholesale at the Kyle of Lochalsh terminus at the same price as at big market termini in London or Birmingham, but do not help the Highland producer to break into Southern markets.

It is not easy to see what can or should be done. Cmd. 7976 skates past the thin ice of this problem by saying that "the special circumstances of the Highlands have been brought to the notice of the Transport Commission by which a new scheme of charges is being considered." This implies that the matter, having been raised, is now left to the Transport Commission, while the Scottish Home Department and the Board of Trade scrupulously keep their hands off what they imply is not their business, and do nothing to educate the public in the many complications of the problem. This is unsatisfactory. The Transport Commission would be quite right to treat such representations as it receives as coming from vested interests, and might well go on to fix charges more accurately representing the cost of carriage of goods on the uneconomic Highland routes. Social policy is not their responsibility, and such a step would be strictly in accordance with their statutory obligations, though it might cause such a drop in railway traffic as to threaten the closure of some lines of strategic importance.[1] On strictly economic analysis, a consumer of transport should pay as nearly as possible the long-run cost of carriage of his goods. But if this meant that the Highland producers would have to pay higher rates for moving raw materials or end products than they now do, and that Highland consumers would be faced with still higher retail prices of "imported" goods, the subsequent outcry would shake the very foundations of Government. The economist might then suggest that the tendency to concentrate industry into narrowing zones of dense population should be counteracted, not by subsidising transport users in the more distant and thinly populated areas at the expense of transport users in the populated areas more suited to localisation of industry, but by paying special subsidies to the inhabitants of the less favoured regions, to compensate them for the high element of transport cost in the prices of their goods, out of the general tax-payers' pockets. These might take the form of relief to producers

[1]This issue has been raised with the Transport Commission by the Federation of British Industries, which claims that the Defence Budget should meet part of the cost of uneconomic lines which are strategically necessary.

from tax or of direct contribution by the State towards extra cost of transport, or of additions to income of consumers, on the model of family allowances. The nice calculation of these various allowances would no doubt provide for the employment of a large body of Government statisticians and administrators, many of whom would live in the Highlands and so help to check the drift of population. But the total cost of the necessary subsidies would quite probably be doubled by the administrative costs of applying them.

The purpose of this analysis has not been mere facetiousness, but a plea for more careful consideration by Government Departments of the implications of leaving the Transport Commission to work out a new rates scheme independent of social and strategic policy. It is probably beyond the capacity of private investigators, or even of bodies like the Scottish Council (Development and Industry), the Scottish Board for Industry, or the Highland Advisory Panel, to secure the data or to preserve the detachment necessary to enable the general public to form from their reports a sound judgment on one of the most difficult aspects of the economic development of the Highlands. The report, completed in September, 1950, of a committee formed by these bodies, indicates that only a few of the Highland firms which replied to their questionnaire are troubled by the incidence of transport costs. But the total number of firms replying was very small, partly just because high transport costs have long discouraged industrial development. Even allowing for guaranteed price schemes covering a big proportion of agricultural output, crofters remote from railhead are handicapped by heavy transport costs (which, for example, discourage the use of artificial fertilisers). The best solution of the transport costs problem is to lower maintenance and depreciation charges by providing better roads, and to ensure full loading and regular routing of "out" and "return" loads, by the widening of the market along lines already discussed.

Industrialisation may have to play second fiddle to the expansion of the tourist industry, which is based on the most abundant and obvious of the Highlands' natural resources—

scenic beauty. This industry also should be based on the small-scale unit—the anglers' hotel and—may one hope?—the crofter's house. Admittedly most crofters' houses are at present unsuitable for summer-letting. But in other parts of North Scotland—*e.g.* Speyside, Donside—it is the practice to let small farm houses for the summer, and it should not be impossible with Government assistance [1] to improve many crofters' houses so that they may offer similar facilities for holiday-making. Similarly, money spent on the improvement of roads, bridges, harbours, ferries, sanitation, water supplies and drainage is an investment in the future expansion of the tourist industry, as well as a public subvention to the amenities of the crofting life. (The handicaps imposed by the Catering Wages Act, 1943, with its uniform regulations governing alike West End hotels and West Highland hostelries have been much less sensible). The Scottish Tourist Board estimates that there were only 18,000 beds available for visitors in 1947—about 1 per 16 of the population of the crofting counties. Even allowing for the inaccessibility of some areas, this is a far smaller proportion than one would expect in a region ideal for holidaymaking. There will be more benefit to the crofter if visitors come to stay with him, and pay for his eggs, poultry, fruit, honey and vegetables—once their presence has forced him to see the need to produce these foods—rather than live in caravans and tents off tinned foods, or in the bigger hotels (owned by Southern companies) off food despatched in cases from towns like Glasgow.

Because of the fixed holiday-making conventions of the British, the tourist season is short, and is likely to remain short, although the mild open spring and mellow autumn in the West Highlands are more attractive and more dependable than the

[1]Results so far have been very disappointing. The Secretary of State for Scotland announced on 26-9-50 that out of an allocation of 600 licences for crofters to build private houses only 166 had been taken up. Yet it is not satisfactory that Government should simply cancel part of the allocation. It has been authoritatively estimated that one house in five is ruinous, and three of the remaining four are structurally unsound. Past legislation (like the Rural Workers' Act) confined improvements to crofters' houses within the cramping limits of the original walls.

showery, sultry, and midge-infested summer months. To compensate for the seasonal peak in employment, there must be alternative part-time occupations suitable especially for the winter months. Fishing is an example, and the West Coast fishing fortunately is best in winter. There has lately been a revival of prosperity in some of the West Coast fishing ports, helped by the Herring Board's schemes to extend processing, but this has been more to the advantage of the full-time fisherman than of the crofter-fisherman.[1] Lobster-fishing can be improved by better marketing arrangements, and these probably depend on processing at the sea coast rather than on improved transport of live lobsters. London hotels ought to be happier handling deep-frozen, ready-to-serve lobsters than having to find extra staff to cope with them alive. The classic example is the Swiss watch-making industry allied to the tourist trade, and this has not been tried in the Highlands (though it figures in Sir Frank Mear's plans for Sutherland). When most homes are lit by electricity, it would be a suitable spare-time occupation for men, while for women, the Shetlands have already shown the way, with a large parcel export trade in hand-knitted woollen garments, made of the famous Shetland wool. Like watches or clocks, these parcels are cheap to transport relative to the prices they fetch. In the Hebrides, of course, there is the handloom weaving industry, which has wisely stayed out of the utility cloth scheme, even though the high prices caused by purchase tax on Harris tweed are likely to cause the industry to lose some of the additional capacity it developed in its post-war expansion. The weaving of tartans (a dying craft which should be revived), the making of souvenirs, the manufacture of articles from deerskin, are examples of the kind of part-time occupation that might be more widely practised. If the cult of the plus-four could be revived (to the benefit of Harris weavers) a domestic industry could be founded

[1]Broadly speaking whatever is done about the herring and white fish industries will be done on a national scale, for the condition of these industries is not less precarious in the rest of the country than in the Highlands. For this reason, little is said about the subject in this article, though the fishing industries are of first-class importance to the region.

on the hand-knitting of men's hose (perhaps in tartans, for the American market).

It is clear that there is no simple set of rules for the economic development of the Highlands. The conditions of each small geographical area need to be considered both by themselves and in relation to their communications with other areas and with potential markets, as well as in relation to the regional problem of the Highlands as a whole. There is such a variety of local conditions that it is not possible to prescribe a single regional solution. That is one of the troubles about leaving the problem to the centralised attention of St. Andrew's House; yet unrelated, piecemeal planning for different localities is equally unsatisfactory. It is even open to doubt whether the present division of responsibility for administration in local matters is satisfactory. The problems of Easter Ross are very different from those of far-distant Lewis within the same county. A division of local authority responsibility running on North-South lines would preserve greater uniformity of climatic and geological conditions, and perhaps also of social characteristics, within a single authority's area; but that would sacrifice the advantage which the present East-West boundary lines have of forcing the major issue of the poverty of the West on the attention of the more fortunate East. The new system of Equalisation Grants [1] to local authority revenues perhaps weakens the old case for retaining the division on East-West lines. The Government's rejection of the proposal to set up a separate county council for the Western Isles may have been wise, but one hopes that it was not made off-hand without due balancing of the democratic merits of decentralisation against the potential economic gains of centralisation. If anything is planned for any area of the Highlands, it can only be accomplished with the full and free participation of the people of the area. If they feel frustrated by the continual reference of proposals to a distant authority out of touch with their situation, sullen indifference will confound

[1] Cmd. 7976 tells us that, except for Argyll, the Equalisation Grant of each crofting county in 1948-9 covered well over half its net expenditure.

the good intentions of the most altruistic planners. There is a lesson to be learned here—as in many other aspects of the Highland problem—from the methods of the Tennessee Valley Authority in U.S.A. To quote Mr. Fogarty : "The T.V.A. . . . did not simply do things for the people : it created opportunities for them to use their own initiative and play their own part in the plan . . . A politically and socially dying region revived . . . new interests, new awareness of the valley's possibilities, and more initiative in using them began to spread." True progress can really derive only from self-help ; but self-help can only flourish within a democratic plan of action. The Highlands are in some danger of being surveyed out of existence before any action is taken, and it may well be that, if the nation agrees that this would involve too great a loss in human material and natural resources, the Government will need to use a new method in dealing with a problem which is unique within this country, although familiar in the undeveloped countries. Legislation (like the Distribution of Industry Act) which is designed to deal with densely populated, depressed industrial areas is not suited to an industrially-undeveloped, agriculturally-backward area of sparse population and poor communications. Even Cmd. 7976 is still only a conglomeration of views of different departments, each of which has other problems of larger importance claiming its prior attention. In the result, large sums are poured into the Highlands in various forms without any machinery being created to ensure that their expenditure is an efficient investment in the productive capacity of the region which will ultimately increase its capacity to export and/or decrease its dependence on imports.

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Books Received

"THE SHOGYO-KEIXAI RONSO" (Journal of Business and Economic Science) :
Published by The Business and Economic Science Society,
Nagoya College of Economics,
Nagoya University, Nagoya, Japan.

"INVENTORIES AND BUSINESS CYCLES" (with Special Reference to Manufacturers' Inventories) :
by Moses Abramovitz.
Published by The National Bureau of Economic Research, Inc.,
1819 Broadway, New York 23, N.Y.
632 pp. Price $6.00

"MODERNIZATION PROGRAMS IN RELATION TO HUMAN RESOURCES AND POPULATION PROBLEMS" :
The Milbank Memorial Fund.
Published by The Milbank Memorial Fund,
40 Wall Street, New York 5.
153 pp. Price Fifty cents.

"THE ECONOMIC POLICY FOR THE THINKING MAN" :
by C. Bresciani-Turroni.
Published by William Hodge & Co. Ltd.,
12 Bank Street, Edinburgh.
304 pp. Price 21s. net.

"THE ONLY WAY" :
by Alexander Loveday.
Published by William Hodge & Co. Ltd.,
12 Bank Street, Edinburgh.
221 pp. Price 12s. 6d. net.

"GOLD COAST—TRADE REPORT FOR THE YEAR 1948" :
Published by The Government Printing Department, Accra.
149 pp. Price 12s. 6d.

"THE STUDY OF PRICES AND THE VALUE OF MONEY" :
by E. Victor Morgan.
No. 53 of Helps for Students of History.
Published for the Historical Association by George Philip & Son, Ltd.,
32 Fleet Street, E.C.4.

"FURTHER FACTS AND FIGURES RELATING TO THE DECONCENTRATION OF THE I. G. FARBENINDUSTRIE AKTIENGESELLSCHAFT" :
by Professor Dr. HERMANN GROSS.
Published by Institut fur Weltwirtschaft at Kiel University.

"THE SOCIAL AND ECONOMIC DEVELOPMENT OF CREWE" :
by W. H. CHALONER.
Published by The Manchester University Press,
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326 pp. Price 30s. net.

"DIE GRUNDLAGEN DER NATIONALIKONOMIE SECHSTE DURCHGESEHENE AUFLAGE" :
by WALTER EUCKEN.
Publisher Springer-Verlag, Berlin W 35,
Reichpietschufer 20.
279 pp.

"THE ECONOMIC ROLE OF THE STATE" :
by WILLIAM A. ORTON.
Published by William Hodge & Co. Ltd., 86 Hatton Garden, E.C.1.
188 pp. Price 12s. 6d. net.

"OXFORD STUDIES IN THE PRICE MECHANISM" :
Edited by T. WILSON and P. W. S. ANDREWS.
Published by Oxford University Press, Amen House, E.C.4.
272 pp. Price 21s. net.

Migration and the Rhythm of Economic Growth, 1830-1913[1]

I. The Trend.
II. Trans-Atlantic Migration from Western Europe.
III. A Structural Change in the late 'Sixties ?
IV. The Driving Forces in the Old World.
V. The Supply of Loanable Funds.
VI. Migration, U.S. Railway Development and British Exports.
VII. Migration and the Building Cycle.
VIII. Migration, National Income, Wages and Employment.
IX. The Interaction of British and American Long Cycles.
X. The "Push" Element in the Long Cycles of Migration.
XI. The Watershed of the 'Nineties.
XII. Concluding Reflections.

The movement of population from Europe to America comprised the major part of international migration in the nineteenth century ; and a great deal is already known about its cyclical character. In his *Migration and Business Cycles*, Harry Jerome, after an exhaustive analysis, concluded that the inflow of population was "on the whole dominated by conditions in the United States. The 'pull' is stronger than the 'push'." [2] He found that "frequently the turns in the migration movement lag behind the corresponding change in employment, indicating that the passage of some time is required before the full effect of a change in employment is felt upon migration. The extent of this lag varies in different cycles, and is also frequently found to vary on the downturn and the upturn of the same cycle. In a few instances the effect of a change in employment conditions is not seen for almost a year afterward, but in other instances the fluctuations in employment and migration appear to be substantially concurrent. The more common lag in the migration fluctuations is from one to five months." [3] Another

[1]This paper is part of a book which I am writing for the National Institute of Economic and Social Research. I am much indebted to the Institute's Advisory Committee for their valuable comments on the manuscript. The responsibility is, of course, entirely mine. I also wish to thank Miss Joan Ayling, of the National Institute, for her excellent work in computing and drawing the charts.

[2] H. Jerome, *Migration and Business Cycles* (National Bureau of Economic Research, Inc., New York, 1926), p. 208.

[3] *Ibid.*, pp. 240-1.

authority, Dr. Dorothy Swaine Thomas, in her study of Swedish emigration came to the conclusion that "of the two factors industrial 'pull' to America and agricultural 'push' from Sweden, the former played an overwhelmingly important role in respect to annual fluctuation from the 'seventies to the end of the emigration era just before the war." Dr. Thomas added the qualification that "cyclical upswings in Sweden were a far more powerful counter-stimulant than is generally recognised. In prosperous years Swedish industry was able to compete successfully with the lure of America; and the latent agricultural push towards emigration became an active force only when a Swedish industrial depression occurred simultaneously with expanding or prosperous business conditions in the New World." [1]

These conclusions about the dynamics of international migration are based on an intensive analysis of cyclical movements. It may be possible to throw further light on the course of migration if we concentrate on another aspect of economic growth—the minor secular fluctuations. That this type of undulation calls for study is suggested by a mere glance at Figure I showing annual immigration into the United States from Great Britain and Germany in the period 1831-1913. Four major troughs stand out clearly: 1840, 1860, 1878 and 1897 in the British series, and 1843, 1862, 1878 and 1898 in the German series. One cannot, of course, deduce anything by arbitrarily picking out prominent turning-points in a series. There is, however, a presumption that we are here confronted with what Professor Kuznets has called "secondary secular movements" with a span of about eighteen to twenty years. A study of the dynamics of migration which confines itself to business cycle fluctuations is bound to leave out important features of economic development. It is necessary to pay attention to the long upswings and downswings in international migration and the associated series in a period of unparalleled expansion. This paper will examine the relation between the

[1]Dorothy Swaine Thomas, *Social and Economic Aspects of Swedish Population Movements*, 1750-1933. (Macmillan Co., New York, 1941), pp. 166-9.

flow of trans-Atlantic migration and the rhythm in the economic growth of the United States and Great Britain respectively in the period 1830-1913.

I. The Trend.

The first task is to decide on the most appropriate method of expressing long-run trend. Here it is best to begin by invoking what Schumpeter called "the Principle of Economic Meaning." He pointed out that "statistical methods are not general in the sense in which our logic is and that, outside of the range of probability schemata, they must grow out of the theory of the patterns to which they are to apply. From knowledge about the phenomena to be handled, which is of course basically empirical but at the same time *a priori* with reference to each individual task in hand, we must try to form an idea about the properties of statistical contours and to devise statistical procedure appropriate to expressing those properties." [1] This analysis is concerned not with short-run oscillations but with minor secular fluctuations in migration over a period of about 80 years ending in 1913. We know that during this period the population of Western Europe entered a phase of declining rate of growth. We also know that the forward march of industry was made possible by drawing extensively on the agricultural reserve army, and this process was bound in the nature of things to reach its zenith and then become weaker. Given these characteristics of our variable—population—it seems reasonable to ascertain the secular trend by fitting a mathematical curve, *e.g.* a parabola. Moreover, thanks to modern statistical research, a great deal is now known about the shape of the trends of economic series for our period. As indices of the economic growth of the United States between 1830 and 1913 we shall use the annual number of railway miles added and the production of bituminous coal; and here again we have a tendency to a declining rate of growth. Professor Kuznets, in his path-breaking work in this field, indicated that "the most essential hypothetical characteristics were derived from a general survey which suggested the tendency

[1] J. Schumpeter, *Business Cycles* (McGraw-Hill Book Co., New York, 1939), Vol. I, pp. 199-200.

of industries to exhibit a declining rate of growth. This feature limited the choice of curves. From those which express this decline in the rate of percentage increase, we have chosen the simple logistic and the simple Gompertz curves as the most suitable. The statistical analysis of the data revealed that these curves, chiefly the logistic, yielded suitable descriptions of the long-time movements in production or volume of business activity for a number of branches in the five most important industrial countries." [1] Much of our understanding of this aspect of economic development comes from the researches of Professor Kuznets; the basic statistical technique which I shall employ owes its inspiration to his work.[2]

In this analysis the trend is expressed by fitting to the original data either a second degree parabola or in one or two instances a straight line by the method of least squares. In most cases this procedure gives a reasonably good fit. The original data are expressed as percentages of the corresponding ordinates of the secular trend; and a nine-year moving average is run through the deviations. This moving average is intended merely as a graphically convenient way of tracing the shape of the minor secular fluctuations.

Some sceptics might argue that this type of analysis is really chasing a mirage, since the so-called "long cycles" are nothing but bunches of short cycles, the average character of each bunch being a reflection of the eccentricities of the short cycles included in it. Such an objection cannot be taken seriously. The minor secular fluctuation is seen in a wide variety of economic and demographic series, and it would certainly be a remarkable coincidence if in every case the short cycles were bunched appropriately. Moreover, no-one will deny the existence of the building cycle, whose duration from peak to peak is about the same as that of the minor secular fluctuation observed in other series. Since investment must entail building activity, it would not be surprising if there were such a phenomenon as an investment cycle with a span of

[1] S. Kuznets, *Secular Movements in Production and Prices* (Houghton Mifflin Co., 1930), pp. 324-5.

[2] I am grateful to Professor Kuznets for the kind interest he has taken in this investigation.

about 18 to 20 years. Professor Kuznets has pointed out that "these swings in rate of secular movement represent a component of the time series that is omitted from view if we confine our attention to the average rate of growth and the average retardation in it, on the one hand; and to changes in the series within the short term cycles (either specific or reference), on the other. Analysis of this component seems definitely worth while, so long as we do not assign to these fluctuations in the secular rate of growth the character of cycles, since their periodic recurrence has not yet been demonstrated or explained." [1] There is no logical case for regarding the short cycle as the only "real" one : economic evolution is characterised by a multiplicity of fluctuations. When Schumpeter adopted his three-cycle scheme he made it clear that there was no special reason for his choice and that five would have been better. Even a casual glance at the course of international migration during our period indicates the existence of minor secular fluctuations, and if we sometimes refer to these as "long cycles" it will simply be because two short words are better than three long ones. The important point is that this particular kind of rhythm seems to have been characteristic of migration and this opens up several interesting problems.

II. Trans-Atlantic Migration from Western Europe.

In this study the Atlantic community of nations is conceived as being one economy made up of inter-dependent regions. Between 1830 and 1913 this Atlantic economy underwent a transformation ; and the expansion of the whole entailed a certain rhythm of movement in the parts. Growth required the transfer of labour and capital from east to west (internal migration from the point of view of the Atlantic economy) ; but this process could not go on indefinitely. One of the chief objects of this analysis is to trace the phases through which this process of migration passed, to try to throw light on the determinants, and, in particular, to attempt to unravel

[1] S. Kuznets : *National Income : A Summary of Findings*, (National Bureau of Economic Research, New York), 1946, p. 61.

the interaction between the pace of development on either side of the Atlantic.

The inflow into the United States from Great Britain, Germany and Europe as a whole, is shown in Figure I. There is a similarity in the long-run trends for Great Britain and Germany ; both reach their maximum in the 'eighties, with German migration then receding somewhat more rapidly than the British. The story of Irish emigration is dominated by the massive efflux after 1846. One cannot escape the poignant irony of that peak of Ireland's tragedy in 1851—the year of the Great Exhibition—when 221,000 of her people crossed the Atlantic in a state of indescribable misery. After the first mass evacuation had subsided, the country continued to lose population at a steady rate ; the number of Irish migrants to the United States in 1910 was the same as it had been in 1835. The outflow from Scandinavia reached a maximum point in 1883 and another high peak in 1903 ; it was not until the 'eighties and 'nineties that the volume of movement became substantial.

In Figure II are plotted the deviations from the trends and the curves showing the fluctuations. At a glance we note that four streams of migration trace out similar minor secular swings. The time-shape is as follows :—

Troughs	Peaks
1838–43	1849–54
1861–2	1869–73
1877–8	1882–3
1898	1903–7

There are, of course, one or two exceptions : immigration from Britain, unlike that from the other three areas, has a peak at 1888 which is a little more prominent than the one at 1882 ; after the turn of the century the British and German series suggest a peak at 1913 accentuated by the rapidly falling trend. No importance need be attached to the erratic behaviour of the Scandinavian series in the 'thirties and 'forties, as the numbers migrating each year at that time were often only a few hundred. After a very high point at the beginning of the 'fifties, the fluctuations in Irish migration show a relatively low amplitude. The significant fact is that the span from trough to trough and

from peak to peak is roughly simultaneous and the same length for the four series.

Is this common characteristic a reflection of the changing rate of advance in the economy of the United States? Figure IV sets out the course of railway building (mileage added) in the United States annually from 1831 to 1913. There is clearly a strong resemblance between its minor secular waves and those of immigration. The exact upturns and downturns are worth examining.

TABLE I

U.S.A.: RAILWAY CONSTRUCTION AND IMMIGRATION, 1831–1913

	Trough Year	Peak Year	Trough Year	Peak Year	Trough Year	Peak Year	Trough Year	Peak Year
Railway Miles Added	1843 and 1844	1856	1861 and 1864	1871	1875	1882 and 1887	1895	1910
Immigration from Gt. Britain ...	1840	1849	1861	1870	1878	1882 and 1888	1897	1905 and 1911
Ireland	1843	1851	1861 and 1862	1873	1877	1883 and 1888	1898	1905
Germany ...	1843	1854	1862	1873	1878	1882	1898	1907 and 1913
Scandinavia ...	1838	1843 and 1849	1861	1869	1877	1882 and 1888	1898	1903

A glance at Table I indicates that in the first three decades each of the turning-points in immigration precedes that of railway construction by one or more years; at the 1871 peak this appears to be still true of the British and Scandinavian series though not of the Irish and German. In the late 'seventies, the 'eighties and 'nineties, the three turning-points in immigration occur after that of railway building. Here is a phenomenon which seems to call for more detailed scrutiny.

III. A Structural Change in the Late Sixties?

Let us take three series of immigration to the United States in the period 1831-1913 *i.e.* from Great Britain, Ireland and Europe; the pace of American economic development will be represented by Railway Miles added and Bituminous Coal mined annually. As already explained, the trend of each series has been ascertained by fitting a second degree parabola, and the original data are expressed as percentages of the corresponding trend ordinate.

A comparison of the graphs of the deviations from trend for Railway Miles Added in U.S.A. and for Immigration to U.S.A. from Great Britain (or from Ireland or Europe) reveals a correlation between the two series. But it is no simple correlation. Inspection of the peaks and troughs of the deviations indicates that somewhere around 1870 there is a switch in the direction of lag. It is interesting to note that a similar switch seems to be present, and at about the same time, in several other pairs of data relevant to this analysis.

The idea that suggests itself is that there was an important structural change in the American economy somewhere round the beginning of the 'seventies. It is tempting to think of the first part of the period as being one in which the pace of investment was set by the inflow of population, whereas in the second part of the period it was the other way about.

Details of the method used to demonstrate the existence of a switch of lag and to locate the "switch zone" are set out in the Appendix. The results may be summarised by giving the sub-periods emerging from the analysis. In the years 1849-62 immigration to U.S.A. precedes railway construction in U.S.A. by about two years, and is itself preceded by bituminous coal output by about two years. Then follows an uncertain period, 1863-70, marked by the disturbance caused by the Civil War. The period 1871-85 shows an unmistakable reversal of lags. Railway building precedes immigration by about $1\frac{1}{2}$ years and precedes coal output by about the same interval. Between 1886 and 1900 the rail-immigration lag is unchanged but coal again precedes immigration. After 1901 immigration

lags considerably behind railway building (3½ years) and behind coal output (4½ years).

The evidence seems to point to a structural change in the American economy just after the Civil War. Before it, immigration preceded railway building and followed coal output. After it, for the rest of the century at least, both immigration and coal output lag behind railway building. In the light of this result, the generally accepted view that immigration was dominated by the "pull" of American economic conditions needs to be revised. In the period before the 'seventies railway construction (which was a major part of current investment) lagged behind the inflow of population. That was the pioneering phase when a comparatively small nation was engaged in subduing a continent and the rate of expansion was conditioned by the arrival of new labour. Stephen A. Douglas, the apostle of "squatter sovereignty," seems to have had a shrewd insight into the nature of the development of the West when he declared in 1845 that a Pacific railway would have to "progress gradually, from east to west, keeping up a connected chain of communication, and following the tide of emigration, and the settlement of the country." [1] Moreover, the railways could not have been built without the gangs of labourers, many of them Irish, recruited in the East and transported to the construction camps.[2]

In the decades after the Civil War, the American economy evolved into a more mature phase, and railway building ceased

[1]Atlantic and Pacific Railroad : A Letter from the Hon. S. A. Douglas to A. Whitney, Esq., New York (dated Quincy, Illinois, October 15th, 1845). Quoted in Henry Nash Smith, *Virgin Land* (Harvard University Press, 1950), p. 33.

[2]Cf. Oscar Handlin, *Boston's Immigrants*, 1790-1865 (Harvard University Press, 1941), Chap. III. "From every part of U.S.A. construction bosses in embankments and water projects, tunnels, canals, and railroads called on Boston for cheap man-power. The city's role as labor reservoir achieved national proportions : often the Boston Irish newspapers, in single issues, printed advertisements for more than 2,000 men wanted in widely scattered places . . . Sooner or later the immigrant in search of employment discovered the labor contractor in search of men." p. 76. There must have been a high rate of turnover, for most of the labourers "were victimised by rapacious sub-contractors who monopolised supplies in isolated construction camps and took back in exorbitant prices what they paid out in wages." *Ibid.*, p. 77.

to be the formative force which it had previously been. Changes in the rate of inflow of population were now induced by changes in the general level of investment ; this is in line with the well-known results of business cycle analysis. But before we can conclude that in this phase the "pull" was consistently predominant, it will be necessary to examine carefully the pattern revealed by the minor secular fluctuations both before and after the "switch zone."

IV. The Driving Forces in the Old World.

If, in the period before the 'seventies, railway building lagged behind population movements, what was it that determined the timing of the latter? A clue to the answer to this question may be obtained by looking at the first cluster of peaks in immigration, Great Britain (1849), Scandinavia (1849), Ireland (1851), Germany (1854), leading up to the peak of railway construction in 1856. One factor was the Californian gold discoveries of 1848, which no doubt explain the sharp jump in the number of immigrants from Britain and even Scandinavia in 1849 : many vessels crossing the Atlantic at that time were crowded with speculators fired with visions of untold wealth awaiting them in Sacramento. In ten years from 1850 the population of the State of California increased four-fold from 92,000 to 380,000 : and this sudden migration both from within and outside the United States proved a powerful fillip to railway building in the Far West. But, spectacular though the gold discoveries were, they were certainly not the fundamental reason for the great upswing in immigration between 1849 and 1854. It is to the old world that we must look for the driving forces. Two of our countries, Ireland and Germany, were passing through a severe Malthusian crisis, the course of which determined the date of their highest emigration.

Between 1781 and 1841 the population of Ireland increased from about 4,048,000 to 8,175,000, while in the same period no less than 1,750,000 had emigrated to Britain and North America.[1] This extraordinary excess of births over deaths was

[1] K H. Connell, *The Population of Ireland*, 1750-1845 (Oxford University Press, 1950), pp. 25 and 29.

made possible because the potato as the staple diet induced early marriage and a minute sub-division of holdings. By 1841 over 80 per cent. of the 691,000 holdings were less than 15 acres. Thanks to English rule, the Irish economy was deprived of industries and rested on an artificial foundation—the production of cereals for export. This swarming community was existing precariously on borrowed time, and the first unfavourable event was destined to bring calamity. A tremendous crisis in the economic life of Ireland was precipitated by the famine of 1846 and the adoption of free trade by the British Government. A new era had arrived in which an Ireland with 8 million people in it was an anachronism. The number of emigrants to America, which had been 20,000 in 1843, reached 220,000 in 1851. To the horrors of the famine the landlords added the unspeakable cruelty of the evictions. Between 1849 and 1856 the recorded number of persons turned out of their holdings was 259,382 which was nearly 18 per cent. of the colossal total of 1,480,000 who emigrated from that tormented island in those seven years. In the words of J. E. Cairnes, "not far from one in every five of the multitudes who swarmed across the Atlantic had been driven by positive physical violence from his home." [1]

It used to be thought that the large efflux of people from Germany to the United States in the early 'fifties was the consequence of the political events of 1848, but modern research does not confirm that view.[2] Close examination of the facts has shown that the districts from which the emigrants came were chiefly in South-West Germany, particularly where the land was tilled as a rule in small holdings. The stress of the early 'fifties had its roots in an agrarian revolution which had been going on for decades. Pinning their hopes on the new methods of cultivation, many peasants had mortgaged their farms only to find themselves brought to the verge of ruin by the crop failures of the 'forties. It was not political ostracism

[1] J. E. Cairnes, "Fragments on Ireland" (1866) in *Political Essays* (1873), pp. 192-3.

[2] See Marcus L. Hansen, "The Revolutions of 1848 and German Emigration," *Journal of Economic and Business History*, August, 1930, p. 630.

but population pressure, and the hardship accompanying technical progress, which drove out the vast majority of the 726,000 Germans who sailed to America in the six years, 1850-55.

Of the 2,093,000 immigrants landing in America from Europe between 1849 and 1854, no less than 1,682,000, or 80 per cent., came from Ireland and Germany. The time of their arrival in the New World was dictated by the march of events in the Old. Two powerful forces were at work—population pressure and innovations. The former showed itself in a welling up of numbers in the age group 20-30 as a consequence of a peak in fertility about a quarter of a century previously. Technical progress took the form of a transformation of agriculture, free trade, and a revolution in transport. The latter made it possible for the first effective transfer of population within the Atlantic economy to take place. The Cunard Line began to operate its trans-Atlantic steamers in the early 'forties, and fares soon became quite reasonable. A passage to America had cost £20 in 1825, whereas by 1863 steamships were charging only £4 15s. 0d. a head and sailing ships £2 17s. 6d.

V. The Supply of Loanable Funds.

The mass migration helped to furnish the United States with both the man-power and the demand conditions for the great investment boom of the 'fifties, the spear-head of which was railway development. But the marriage of the displaced labour of Europe to the natural resources of America was not in itself enough to inaugurate that upsurge of economic progress. The level of employment in the early phase of capitalist expansion in the United States was to be conditioned by the supply of loanable funds from outside. We shall now investigate the role of Britain's capital exports as the dynamic which ensured the absorption of Europe's redundant workers into the growing economy of the United States. As the pioneer in the industrial revolution, England had a rich capitalist class with a high propensity to save. Annual estimates of her foreign investment are not available before 1866 ; by 1851, however, no

less than 225 million dollars of American State, Federal, County and City debt, together with railway bonds (excluding short-term debt) were held in British hands. It may be possible to guess the probable shape of the curve of capital exports in the first three decades of our period by consulting the course of share prices.

An index number of British share prices is available for the period 1840-1913.[1] We shall first examine the minor secular fluctuations in this series, in relation to those of British capital exports and home investment, in the period 1871-1913. The data are shown in Figure III.

There is a striking inverse correlation between the deviations from trend of home and foreign investment. From 1872 home investment rises to a peak in 1877, while capital exports (at constant prices) descend sharply to a trough in the same year. From 1877 to 1888 capital exports rose to a peak, with domestic investment falling to a low point in 1887 ; the years 1888 to 1901-2 saw a downswing in foreign lending, whereas from 1877 to 1899 home investment recovered vigorously. Finally in the first decade of the century capital exports were rising while capital formation at home was falling off. The index of share prices may be regarded as an indicator of the profitability of investment in the United Kingdom. It is interesting that the swings in this index are approximately in harmony with those of domestic investment, and inverse to those of foreign investment. The only exception is seen in the years 1873-7, when security prices were falling rapidly while home investment was rising.[2] It could be argued, however, in the light of the circumstances of those years, that the Stock Exchange as early as 1873-4 was casting the shadow of the slump in real investment, which came in 1877. From 1877 to 1913 the course of the moving average of share prices is a

[1] P. Rousseaux, *Les Mouvements de Fond de l'Économie Anglaise*, 1800-1913 (Louvain), 1938, p. 272. For the period after 1867 the figures are based on K. C. Smith and G. F. Horne, "An Index Number of Security Prices, 1867-1914," Royal Economic Society Memorandum 47, 1934.

[2] For a detailed account of these years, see W. W. Rostow, *British Economy of the Nineteenth Century* (1948), Chapter IX, "The Depression of the 'Seventies, 1874-9."

faithful reflection of the movement of home investment ; and if it is inverted it agrees well with the swings of foreign lending.

Assuming that the inverted index of share prices is a guide to the course of foreign investment, we can try the experiment of putting it alongside the deviations from trend of railway construction in the United States, and migration from Britain to the United States, for the whole period 1840-1913. The result is set out in Figure IV.

For the first twenty years immigration and our indirect estimate of foreign investment move together from a trough in the early 'forties to a peak in 1849 and then down to a low point in the early 'sixties. Railway construction, as already explained, reaches its first peak later—in 1857, and then declines steeply to a deep trough in 1861. The Civil War caused railway development to remain stagnant for five years, but it did not affect immigration which revived sharply from 1863 to 1866. After a minor break in 1867-8, immigration again swings into line with railway building which was reviving very rapidly in the late 'sixties. Figure IV is intended simply to fill a gap in the picture of the long cycle from 1840 to 1865 ; and it is clear that the fluctuation traced out by our derived curve of foreign lending from the trough of 1843-4 to the trough of the early 'sixties coincides with the wave of immigration and railway building. There seems to have been a sharp increase in capital exports from Great Britain in the late 'forties with a peak in the same year as emigration. If we take European immigration to U.S.A., the two peaks which stand out are in the 'fifties and the 'eighties, and the same is true of the inverted index of British share prices and American railway construction.

VI. Migration, U.S. Railway Development and British Exports.

So far the enquiry has brought out a certain relationship between the swings of economic progress in the United States (as shown by railway construction and coal output) and the course of trans-Atlantic migration. The next step is to relate the above to series reflecting the economic growth of the United

Kingdom in the period 1840-1913. Unfortunately this is not easy owing to the absence of adequate statistical data for the first thirty years of this period. However, we will begin by examining the course of British exports.[1] The time-shape of the long cycles in British exports, and particularly in the part of them consisting of iron and steel goods, corresponds closely to that of railway construction in the United States; and, from what we know already, the same is true of British emigration and foreign investment.

There is a striking contrast between the fluctuations in the exports of labour and commodities on the one hand,and those in home investment on the other. Capital formation in Britain goes up to a peak in the late 'seventies, while exports and emigration plunge downward. The 'eighties see exports and emigration well above the norm and domestic investment subnormal; the opposite is true of the 'nineties. In the first decade of the century exports, emigration (and, we may add, foreign investment) are on the upgrade, though not so pronounced in the case of exports, whereas capital formation at home slumps badly.

If we confine attention to the long cycle and a half through which the system moved from the late 'eighties to the eve of the First World War, it is evident that upward deviations of exports from trend were accompanied by downward deviations in home investment. A minor secular slump in foreign investment, emigration and commodity exports was associated with a minor secular boom in domestic capital formation.

VII. Migration and the Building Cycle.

We shall now consider British emigration to U.S.A. in relation to building in U.S.A. and the United Kingdom. It happens that two valuable series are available, Clarence D. Long, Jr.'s index of new building in the United States, 1856-1935,[2] and Dr. Cairncross' index of investment in building in

[1]Lack of space makes it impossible to print the graph on which this section is based.

[2]Clarence D. Long, Jr., *Building Cycles and the Theory of Investment* (Princeton University Press), 1940, p. 226-7.

Great Britain, 1870-1913.[1] Figure V sets out the minor secular fluctuations in these two series together with those in the emigration of British citizens to the U.S.A., 1857-1913. An explanation of the American statistics is desirable before inferences are drawn from this chart. In the source quoted it is pointed out that turning-points can be located according to one of two criteria, either the index here plotted or the medians of the turning-points in the various cities comprised in the index.[2] The two usually give the same turning dates, but sometimes they differ by one, two, or even three years. The effect of the great volume of activity and the abnormal size of the unit of building in the city of New York tended to exercise an unfortunate bias on the index. For this reason the turning dates for American building given in the following Table are more accurate than those shown in Figure V.

TABLE II

PEAKS AND TROUGHS IN BUILDING ACTIVITY IN GREAT BRITAIN AND U.S.A.

U.K. Building Investment		U.S.A. (*) (Median Dates of the various cities)			
		Non-Residential Building		Residential Building	
Peak	Trough	Peak	Trough	Peak	Trough
	1871	1871		1871	
1877			1877		1878
	1892	1892		1892	
1899			1900		1900
	1912	1913		1912	

(*) Clarence D. Long, Jr., *op. cit.*, p. 136.

There is a remarkable inverse relation between the course of building in the two countries. The top of a boom in America

[1] A. K. Cairncross, *Home and Foreign Investment in Great Britain*, 1870-1913 (unpublished thesis, University of Cambridge Library).

[2] See Clarence D. Long, Jr., *op. cit.*, p. 137.

in 1871 coincided with a low point in Britain ; corresponding to the British peak in 1877 is a trough in U.S.A. in 1877-8 ; similarly for the next thirty years the two curves are almost exactly reverse in their movement. It is also clear that the long cycles in emigration from the British Isles are in harmony with those of building in U.S.A. and run in the opposite direction to the course of domestic building. Railways and building together make up a large part of current investment.

VIII. Migration, National Income, Wages and Employment.

The relation between fluctuations in emigration and those in national income, wages and the level of employment deserves careful scrutiny. We have already noticed that the ups and downs in home investment on the one hand tended to be inverse to those of foreign investment and commodity exports on the other. In Figure VI we present five series for the United Kingdom for the period 1870-1913 : the deviations of real national income and real wages from their respective trends, the level of employment (nine year moving average of the annual percentage of Trade Unionists in work), net oversea migration per 10,000 of the population, capital exports as a percentage of total investment.

We note that income, wages and employment vary together and that their fluctuations are the opposite of those of net emigration and foreign investment. From a position of full employment in the early 'seventies the three curves sweep down to a low level in mid-'eighties, climb to a peak in the late 'nineties and then descend to a trough after the middle of the first decade of the century.

Figure VII shows the course of the wages bill and profits respectively as proportions of the national income, net emigration to all parts and to the U.S.A., and capital exports as a fraction of total investment. At first sight all that the wages bill curve seems to indicate is the well-known fact that the share of the social product received by labour was more or less stable. However, a close inspection brings out some interesting features. In the years 1876-7 to 1886-8 when the rate of

growth of real national income was below normal, with a slump in home investment and a steep rise in net emigration and capital exports, the share of income going to labour was declining. From 1886-8 to 1899-1900 a phase of vigorous growth in home investment and national income with a sharp drop in emigration and foreign investment was accompanied by a marked increase in the relative share of labour up to 1894 which, after a slight set-back, was for the most part maintained. Then we come to a striking feature of Figure VII. From the turn of the century to the eve of the war the rate of growth of income a head slackened significantly, domestic investment was declining, capital exports and total emigration soared to record heights, while net emigration to the United States hardly increased at all. In this final phase the part of the national income received by labour fell substantially and the share of profits was correspondingly enlarged.

IX. The Interaction of British and American Long Cycles.

The foregoing analysis suggests a mutual relation between the minor secular fluctuations in the British and American economies. When the United States experienced a strong upsurge of activity, she absorbed large quantities of labour and capital from Britain and the rate of growth in the latter country slackened. Then, when the American system was digesting what it had swallowed, Britain's appetite for home investment would increase, her real income would grow faster than usual, while her exports of men and money became negligible. There was no such thing as an international long cycle.

Owing to the lack of the requisite time series, one cannot unfortunately obtain a satisfactory picture of the process before 1870. However, since it appears that there was round about that time a structural break after which emigration to America lagged behind railway development in that country, there is perhaps some advantage in concentrating on the period, 1870-1913. Figure VIII sets out for each series the nine-year moving average through the deviations from its trend. These curves are taken to represent the course of the minor secular

swings in these series ; their relative amplitude has no significance. The pattern that seems to emerge is as follows. From 1870 to the early 'eighties, British exports of labour, capital and commodities move in the wake of American activity in railway construction and building, which slightly precedes American output of bituminous coal. While British foreign investment and U.S. building decline and then rise together, British home investment and building rise and then fall together. In the inverse relation between the two building series, the American seems to lag behind the British.[1]

Between the peak of American activity in the early 'eighties and the structural change of the 'nineties, the railway and coal indices in the United States show a downswing which is, perhaps, slightly anticipated by a decline in British capital exports and followed by a fall in British emigration to America and in American building. In Britain the decline in foreign lending lags behind a rise in home investment and building ;

[1]The lags have been determined in the way described in Appendix I. That they agree so well with the results obtained by inspecting the moving averages supports the use of these curves for analytical as well as graphic purposes. For 1871-1883 the correlation coefficients of deviations from trend for American Railway Miles added and Immigration from Britain are (*a*) Immigration ½ year behind 0·776, (*b*) Immigration 1½ years behind 0·868.

For 1871-1884 the coefficients for Bituminous Coal Output in U.S.A. and Immigration from Britain are (*a*) Immigration behind by 1½ years 0·649, (*b*) behind by ½ year 0·763, (*c*) ahead by ½ year, 0·830, (*d*) ahead by 1½ years 0·669.

For 1862-1890 the coefficients for U.K. Total Exports and Railway Miles Added in the U.S.A. are (*a*) no lag 0·784, (*b*) exports behind by 1 year 0·861.

For 1869-1879 the coefficients for Railway Miles Added in the U.S.A. and U.K. Capital Exports are (*a*) no lag 0·721, (*b*) Capital exports behind by 1 year 0·948, (*c*) Capital exports behind by 2 years 0·903.

For 1869-1879 the coefficients between New Building in the U.S.A. and Immigration from G.B. are (*a*) Immigration ahead by 1½ years 0·743, (*b*) ahead by ½ year 0·776, (*c*) behind by ½ year 0·894, (*d*) behind by 1½ years 0·904, (*e*) behind by 2½ years 0·868.

For 1871-1880 the coefficients for Quantum of Investment in Building in G.B. and Volume of New Building in U.S.A. are (*a*) U.S.A. ahead by 1 year 0·496, (*b*) no lag 0·556, (*c*) U.S.A. behind by 1 year 0·576, (*d*) U.S.A. behind by 2 years 0·698.

and the latter now moves in the wake of American building.[1] The pattern of long cycles persists through the 'nineties into the first decade of the century, with rather longer lags.

This is perhaps too short a period on which to base any firm generalisation. However, so far as the evidence goes, there was a long investment cycle with a span similar to that of the building cycle ; and the British investment cycle was inverse to that of the United States.

I now propose to check these results by examining in detail the national income statistics of Britain and the United States over the same period. Fortunately such data are available from 1870 onward. Professor Kuznets has found confirmation of the genuineness of "secondary secular movements" in his investigation into the rate of growth of the national income of U.S.A. since 1869. He writes : "From an apparent peak in the interval centering on 1876, the rate of change in national income and in income per capita declines to a trough in the interval centering on 1891 ; rises to another peak in the interval centering on 1901 ; declines to another trough in the interval centering on 1911 ; . . . the average period between troughs is twenty years ; that between peaks 22·5 years." [2]

[1]For 1884-1898 the coefficients for American Railway Miles Added and Immigration from G.B. are (*a*) Immigration behind by ½ year 0·745, (*b*) Immigration behind by 1½ years 0·880. For 1885-1898 the coefficients for Bituminous Coal Output in U.S.A. and Immigration from G.B. are (*a*) Immigration behind by 1½ years 0·801, (*b*) behind by ½ year 0·864, (*c*) ahead by ½ year 0·581.

After 1892 the behaviour of U.K. Total Exports and U.S. Railway Miles Added involves a lag of four or five years. For the position before 1892 see note 1 above.

For 1885-1901 the coefficients for U.K. Capital Exports and U.S.A. Railway Miles Added are (*a*) Capital exports ahead by 1 year 0·663, (*b*) no lag 0·768, (*c*) behind by 1 year 0·427.

For 1885-1903 the coefficients for U.S.A. New Building and Immigration from G.B. are (*a*) Immigration ahead by ½ year 0·777, (*b*) ahead by 1½ years 0·841, (*c*) ahead by 2½ years 0·816.

For 1884-1904 the coefficients for Quantum of Investment in Building in G.B. and Volume of New Building in the U.S.A. are (*a*) Britain ahead by 1 year 0·784, (*b*) no lag 0·816, (*c*) Britain behind by 1 year 0·852, (*d*) Britain behind by 2 years 0·866.

[2]S. Kuznets, *National Income : A Summary of Findings*, (New York, 1946), pp. 63-4.

The figures which led to this conclusion are given for overlapping decades, 1869-78, 1874-83, and so forth. Our first step will be to calculate British national income and income a head for these same decades up to 1929-38. The British series are set out with the American in Tables III and IV.

TABLE III

REAL NATIONAL INCOME, UNITED STATES AND UNITED KINGDOM
DECADE ESTIMATES, 1869–1938

Decade (Yearly Average)	United States [1]		United Kingdom [2]	
	National Income at 1929 Prices ($1,000 m)	Per Capita $	National Income at 1900 Prices (£ million)	Per Capita £
			[3]	[3]
1869–78	9·3	215	858·2	26·4
1874–83	13·6	278	944·6	27·8
1879–88	17·9	326	1,075·6	30·2
1884–93	21·0	344	1,278·3	34·5
1889–98	24·2	357	1,489·6	38·5
1894–1903	29·8	401	1,668·9	41·2
1899–08	37·3	458	1,799·2	42·4
1904–13	45·0	502	1,930·1	43·6
1909–18	50·6	517	1,975·1	43·4
1914–23	57·3	546	1,981·2	43·7
1919–28	69·0	612	2,082·5	46·3
1924–33	73·3	607	2,229·1	48·8
1929–38	72·0	572	2,486·6	53·3

(1) From Kuznets, *op. cit.*, p. 32.

(2) Based on A. R. Prest, "National Income of the United Kingdom, 1870-1946," *Economic Journal*, March, 1948, pp. 58-9.

(3) These figures are for the decade 1870-78.

TABLE IV

REAL NATIONAL INCOME, UNITED STATES AND UNITED KINGDOM
% CHANGE FROM DECADE TO OVERLAPPING DECADE
1869–1938

Decade (Yearly Average)	United States		United Kingdom	
	National Income at 1929 Prices %	Per Capita %	National Income at 1900 Prices %	Per Capita %
1869–78	—	—	—	—
1874–83	+45·6	+29·3	+10·1	+ 5·3
1879–88	+31·4	+17·3	+13·9	+ 8·6
1884–93	+17·7	+ 5·5	+18·9	+14·2
1889–98	+14·9	+ 3·8	+16·6	+11·6
1894–1903	+23·1	+12·3	+12·0	+ 7·0
1899–08	+25·5	+14·2	+ 7·8	+ 2·9
1904–13	+20·5	+ 9·6	+ 7·3	+ 2·8
1909–18	+12·4	+ 3·0	+ 2·3	— 0·5
1914–23	+13·3	+ 5·6	+ 0·3	+ 0·7
1919–28	+20·6	+12·1	+ 5·1	+ 6·0
1924–33	+ 6·1	— 0·8	+ 7·0	+ 5·4
1929–38	— 1·7	— 5·8	+11·6	+ 9·2

These figures are not only further evidence of the existence of minor secular fluctuations but they also underline the fact that the rhythm in the growth of Britain was different from that of the United States. While America's rate of expansion of income a head was slowing down in the interval between 1869-78 and 1889-98, the British rate was accelerating up to 1884-93 and was still high in 1889-98. The upswing in the United States from 1889-98 to 1899-1908 is paralleled by a downswing in the United Kingdom. A trough of a long cycle is indicated for both countries in 1908-18 ; after that the United States goes through a whole cycle ending in a very low trough in the last decade, whereas Britain continues on a fairly steady upswing. The three highest rates of growth for America occur in the 15-year periods centering on 1876, 1881 and 1901, and for Britain in the 15-year periods centering on 1886, 1891 and 1931. We again reach the conclusion that the rate of economic progress in the United Kingdom tended to be high in those periods when the pace of advance in the United States was low.

Similarly for the period 1870-1913 we can look at the major components of capital formation and compare their time-shape with that of international migration of labour and capital. The data are shown in Table V.

TABLE V

UNITED STATES AND UNITED KINGDOM : RATES OF CHANGE IN MIGRATION AND COMPONENTS OF INVESTMENT FROM DECADE TO OVERLAPPING DECADE, 1869–1913

Decade (Yearly Average)	United States				United Kingdom			
	Total Immigration	Net Immigration	Net Producer Durables	Net Construction	Quantum of Home Investment	Quantum of Investment in Building	Balance of Payments on Income Account	Unemployment
	(1) %	(2) %	(3) %	(4) %	(5) %	(6) %	(7) %	(8) %
1869–78...	—	—	—	—	—	—	—	—
1874–83...	+26·4	+104·0	+73·5	+39·0	+12·8	+12·8	— 50·4	+50·0
1879–88...	+35·1	+ 74·4	+27·7	+53·6	— 4·8	—13·5	+102·1	+44·4
1884–93...	— 4·4	— 18·7	— 4·2	+56·3	+ 6·2	— 2·1	+ 46·6	— 4·6
1889–98...	—19·7	— 37·9	— 7·7	+19·7	+24·3	+23·7	— 25·4	—29·0
1894–03...	+ 7·2	— 29·8	+49·2	— 3·1	+26·3	+30·3	— 37·6	—11·4
1899–08...	+89·3	+ 41·4	+75·3	+15·8	+10·1	+ 5·2	+120·3	+10·3
1904–13...	+25·2	+ 4·7	+ 9·4	+14·6	— 5·5	—22·1	+132·4	+ 9·3

Sources : (1) *Historical Statistics of the United States* 1789–1945 (U.S. Department of Commerce, Washington, 1949), pp. 33–4.
(2) Ferenczi, *International Migrations*, (New York, 1929), Vol. I, p. 641.
(3) and (4) At 1929 prices. Kuznets, *National Product since* 1869, (National Bureau of Economic Research, New York, 1946), p. 118.
(5), (6), (7) and (8) A. K. Cairncross, *Home and Foreign Investment in Great Britain*, 1870–1913. (Unpublished thesis, Cambridge University Library), Tables 12 and 21. The first decade is 1870–78).

Table V is a short-hand statement of the thesis of this paper. When the output of producer durables and construction in the United States was increasing rapidly, the United Kingdom experienced a falling rate of real investment at home, a growing surplus in the balance of payments, heavy unemployment and a large net outward flow of migrants. This was evident in the 15-year periods centering on 1881 and 1886 and again in the early years of the century. In between the opposite was true ; a relatively low rate of capital formation in U.S.A. with Britain

going through a phase of unusually high domestic investment, little emigration, slight unemployment and a contracting balance of payments on income account. Columns 5 to 8 of Table V yield almost exactly the same result as the curves based on year to year data in Figure VIII. The long cycle in the United Kingdom—from trough to trough in the case of home investment and from peak to peak in the case of foreign investment and unemployment—runs from the period centering on 1881 to the period centering on 1906.

One peculiarity of the swings of activity in the United States is that the cycle in net construction does not coincide with that in net producer durables (Columns 3 and 4 of Table V). The main reason is the influence on the former index of the part of it which is building. Table VI enables us to compare the percentage rates of change in residential and non-residential new building with those in real income a head, net producer durables and immigration in the United States.

TABLE VI

U.S.A.: RATES OF CHANGE IN IMMIGRATION, NATIONAL INCOME, NET PRODUCER DURABLES AND BUILDING, 1869–1913

Decade (Yearly Average)	National Income a Head	Net Producer Durables	Residential Building	Non-residential Building	Total Immigration	Net Immigration from U.K.
	%	%	(1) %	(1) %	%	%
1869–78...	—	—	—	—	—	—
1874–83...	+29·3	+73·5	—38·8	—47·2	+26·4	+104·0
1879–88...	+17·3	+27·7	+31·6	+ 7·7	+35·1	+ 74·4
1884–93...	+ 5·5	— 4·2	+42·6	+21·9	— 4·4	— 18·7
1889–98...	+ 3·8	— 7·7	— 6·4	— 3·0	—19·7	— 37·9
1894–03...	+12·3	+49·2	—25·7	— 8·3	+ 7·2	— 29·8
1899–08...	+14·2	+75·3	+16·8	+30·9	+89·3	+ 41·4
1904–13...	+ 9·6	+ 9·4	+37·0	+44·1	+25·2	+ 4·7

Source: (1) Clarence D. Long, Jr., *op. cit.* Appendix B. Section 3.

The building and immigration cycles are equal in length and their amplitude seems to be remarkably similar; the interesting point is that the ups and downs in new building—

particularly residential—come one interval after the corresponding change in immigration. This component of American investment appeared to follow in the wake of immigration which itself lagged behind the movements in real national income and the production of durable producers' goods. This inference supports the results given in the previous section based on annual data which permitted a more accurate account of turning-points. Professor Kuznets, after calculating percentage deviations from a straight line or a three-point curve fitted to the rates of percentage change in the national income and population of the United States from decade to overlapping decade, 1869-1938, concluded as follows : "The troughs and peaks in the population rates of growth lag fairly consistently by one interval behind those in the rates of growth of national income." [1] Our analysis seems to lead to the conclusion that this lag in the rates of growth of the American population reflected the influence of immigration.

X. The "Push" Element in the Long Cycles of Migration.

In Section IV reasons were given for the view that the timing of the mass immigration into the United States in the late 'forties and early 'fifties was determined by expulsive forces in the Old World. After the structural change of the late 'sixties it would seem that the 'pull' element is as evident in the long cycles of migration as it is in the short cycles. This question cannot be dealt with fully here ; but brief reference must be made to a characteristic of population growth which suggests caution.

According to Eilert Sundt's findings based on Scandinavian vital statistics over an extensive period, there were long cycles in the number of births which led inevitably to periods of ebb and flow in the relative size of the age group 20-35. Swedish statistics reveal that the ebb periods occurred in 1666-80, 1696-1710, 1731-45, 1761-75, 1796-1810, 1826-40 and 1861-75. The flow periods were 1681-95, 1711-30, 1746-60, 1776-95, 1811-25 and 1841-60 : it is significant that in the years 1876-90

[1] Kuznets, *National Income : A Summary of Findings*, p. 66.

the flood was channelled away in oversea emigration.[1] Undoubtedly Western Europe in 1841-50 contained a relatively large youthful population—the result of the boom in the birth rate just after the Napoleonic Wars; hence the strong propensity to emigrate at that time. It is reasonable to ask what part was played by the same phenomenon later in the century.

A little experiment may be performed on the abundant vital statistics available for Sweden. A graph of the five-year moving averages of Swedish emigration in each quinquennial age group for the period 1860-1908 was plotted, and another showing the five-year moving average of Swedish births for the period 1820-1908. Interesting correlations were found between the moving averages of births 1845-1888 and emigration 1863-1906 in the 15-20 age group, births 1840-1883 and emigration 1863-1906 in the 20-25 age group, and births 1835-1878 and emigration 1863-1906 in the 25-30 age group. The correlation coefficients were, respectively, 0·665, 0·732 and 0·556. The correlation coefficient for births 1830-1873 and emigration 1863-1906 in the 30-35 age group was 0·242.

The majority of the migrants were between 15 and 30 years of age, and the heaviest outflow usually came from the 20-25 age group. Emigration in these groups, particularly the central one, was evidently related to the level of the birth rate at the time those emigrants were born. That Sweden's greatest loss through emigration took place in the late 'seventies and the 'eighties was to some extent pre-determined by the births cycle.

A word on Italian emigration is relevant here. The high level of the birth rate in Italy in the 'seventies and 'eighties was inevitably followed by a flow period from 1900 onward, and that was when the enormous exodus of Italians across the Atlantic took place. It may well be asked why such mass emigration had not occurred in previous flow periods. There can be no simple answer; but it is pertinent to mention two points. First, emigration from Italy in the nineteenth century was greatest during years in which economic conditions at

[1]See G. Sundbärg, *Bevölkerungsstatistik Schwedens*, 1750-1900 (Stockholm, 1923), p. 11.

home were flourishing, and it tended to languish when domestic business was bad. For example, oversea migration as a proportion of the total outflow rose sharply during the comparative prosperity of 1880-7.[1] The 'push' was there all the time, but people were able to leave the country in substantial numbers only when they could afford the costs of movement.[2] Secondly, after the mid-'nineties population pressure reached an unprecedented magnitude ; and the new generation, not so illiterate or so desperately poor, were able to find a way of escape, thanks in some measure to the flow of remittances from those who had already gone to America in previous decades.

One cannot ignore the fact that the outstanding minor secular upswings in trans-Atlantic emigration from Europe—*e.g.* from Ireland and Germany in the 'forties and 'fifties, from Sweden in the 'eighties, and from Italy from the turn of the century to the First Great War, occurred at times when the proportion of young people in the population was exceptionally large as a consequence of the births cycle. This factor could be expected to exercise its maximum influence when periods in which the lower age groups were swollen coincided with innovations, *e.g.* in agriculture, which made labour redundant. The propensity to emigrate would be further intensified if a demographic flow period accompanied by disturbing innovations took place in a social structure marked by immobility as between occupations and classes. Strong impediments to internal readjustment would make the *external* safety-value more active. It is arguable that three outstanding contributions of European labour to the American economy—1,187,000 Irish and 919,000 Germans between 1847 and 1855, 418,000 Scandinavians and 1,045,000 Germans between 1880 and 1885, and 1,754,000 Italians between 1898 and 1907—

[1]See Gustaf F. Steffen : "Utvandringen och de ekonomiska Konjunkturerna i Sverige och Italien," *Emigrationsutredningen* (Stockholm, 1910), Bilaga XVIII, pp. 48-9.

[2]Cf. Robert F. Foerster, *The Italian Emigration of Our Times* (Harvard University Press, 1919), Chap, VI. Discussing the heavy emigration from Sicily, this author wrote : "It is significant that emigration should not have originated where misery was greatest. It began where there was the chance of saving enough for passage fares and has maintained itself where wages were at a medium level" (p. 104).

had the character of evacuations. Expelled from Europe, this man-power made for itself a niche in the American system where it exercised a direct formative influence on technical conditions of production and habits of consumption, and thereby set in motion a 'pull' for further immigrants.[1]

XI. The Watershed of the 'Nineties.

Several conditions seem to point to the decade of the 'nineties as the end of one epoch and the beginning of another. In conducting the analysis of the switch of lags (described in Appendix I) one could not but be struck by the less conclusive results obtained for most pairs after 1900. It looked as if the first part of the new century really belonged to a separate period in which the structural dynamic was different. Some

[1] A possible development of this line of thought may be indicated briefly; but until more intensive empirical testing has been carried out it must remain speculative.

(*a*) There were three big expulsions of population from Europe :
1847-54—Irish and German,
Early '80's—German, Scandinavian and British,
1900-07—Southern and Eastern Europe.
The timing was determined by the births cycle in the Old World plus innovations and/or calamity.

(*b*) During each of these demographic flow periods, investment in U.S.A. lags behind population inflow (or is simultaneous with it) : then there is a switch in the order of lag lasting until the next big evacuation from Europe when immigration again assumes a formative influence. Thus the "push" and "pull" effects alternate.

(*c*) Each big inflow of cheap labour into U.S.A., accompanied by a rise in the import of capital, transforms the production functions in the U.S. economy, inducing a widespread adoption of automatic machines, interchangeable parts, standardised output and dilution of labour. Out of this comes the "pull" for more immigrants.

(*d*) The three big expulsions of European labour—in the 'fifties, 'eighties and 1900's—coincide with the upswings of the long investment cycle in U.S.A. ; and corresponding to each of these upswings there is a downswing of the investment cycle in the United Kingdom, and *vice versa*.

(*e*) Each large inflow of population into U.S.A., accompanied by a "widening" of the capital structure (*i.e.* constant or declining ratio of capital stock to gross national product) ; the subsequent downswing in the long investment cycle in U.S.A. is accompanied by a "deepening" of the capital structure (increase in the ratio of capital stock to gross national product). Given the inverse relation between the investment cycles in U.S.A. and U.K., it is conceivable that periods of "deepening" in U.S.A. were periods of "widening" in U.K. and *vice versa*.

of the important facts which suggest a major turning-point in the 'nineties will now be briefly enumerated.

There are five points of interest on the American economy. First, in the mid-'nineties the "old" immigration from North-West Europe began to be displaced by the increasing mass of "new" immigration from Southern and Eastern Europe. Secondly, by the end of the century a marked change in the socio-economic structure of the American labour market could be observed. The children of previous immigrants from North-West Europe had risen in the social scale and were occupying positions superior to those of their parents. For example, whereas in 1890, 11% of the British born persons in the United States were in "white-collar" jobs, in 1900 no less than 23% of the second generation were in such jobs. On the other hand, 12% of the first generation in 1890 were servants and only 4% of the second generation in 1900. The process had been going on for some time; but by the 'nineties this upward movement in the social hierarchy had become large enough to exercise an important influence on future immigration.

Thirdly, about 30 years after the passing of the Homestead Act of 1862, practically all the good land had been appropriated; but not much of it was in the hands of small settlers. By 1890 the railroad companies had taken four times as much land as had been distributed to settlers under the 1862 Act.[1] Of the 8,396,000 persons occupied in agriculture in 1890, 3,004,000 were hired labourers and 1,500,000 tenant workmen, so that less than half of the people earning a living in agriculture were tilling their own land, including mortgaged farms.[2] "Only three-eighths of the families of the United States were cultivating the soil 'as owners, tenants or labourers' and the ratio was declining constantly. Over half of these were on an economic basis scarcely, if any, better than that of the city labourer."[3] America had emerged as a powerful industrial state bearing the marks of a stratified society.

[1]Fred A. Shannon, "The Homestead Act and the Labor Surplus," *American Historian Review*, XLI, No. 4, July, 1936, p. 638.

[2]*Report of Industrial Commission*, Vol. XI (1901), p. 77.

[3]Fred A. Shannon, *loc. cit.*, p. 648.

Fourthly, the capital structure of the economy underwent a significant change in the 'nineties. Tables VII and VIII indicate what happened to the ratio of capital stock to gross national product in U.S.A. from 1879-88 to 1919-28.[1]

TABLE VII

RATIO OF IMPROVEMENTS AND EQUIPMENT TO GROSS NATIONAL PRODUCT (THE LATTER PER YEAR), 1929 PRICES, IN U.S.A.

Decade	Aggregate Ratio
1879–88	1·98
1889–98	2·58
1899–1908	2·56
1909–18	2·78
1919–28	2·47

TABLE VIII

CHANGES IN RATIO OF IMPROVEMENTS AND EQUIPMENT TO GROSS NATIONAL PRODUCT, AT CONSTANT PRICES, IN U.S.A.

	1879–88 to 1889–98	1889–98 to 1899–08	1899–08 to 1909–18	1909–18 to 1919–28	Total
1. Total	+0·60	—0·02	+0·22	—0·31	+0·49
2. Due to intra movement ...	+0·53	—0·34	—0·02	—0·27	—0·06
3. Due to inter-sector shifts ...	+0·07	+0·24	+0·25	+0·06	+0·62

There can be little doubt that the capital structure of the United States was going through a rapid process of "deepening" in the last two decades of the nineteenth century and that this did not continue after the end of the 'nineties. Lines 2 and 3 of Table VIII show the relative influence on the aggregate ratio of changes within each sector and of changes in the comparative importance of the various sectors in the economy. The striking increase in the ratio between the 'eighties and 'nineties was only slightly attributable to inter-sector shifts; after the turn of the century the significant decline in the ratio as shown by line 2 was more than enough to counteract the

[1]These figures are from an unpublished manuscript belonging to Professor Kuznets. I am grateful to him for allowing me to use them.

rise occasioned by the change in the balance of the different sectors.

In connection with this development we may note that the United States was nearing the end of her career as an importer of capital. Her passive balance nearly disappeared in the decade 1889-98 (it was under an annual average of $2 million at 1929 prices). The relevant figures are summarised in Table IX.[1]

TABLE IX

NET CHANGES IN CLAIMS AGAINST FOREIGN COUNTRIES COMPARED WITH CAPITAL FORMATION, 1869–1928, U.S.A. (DOLLAR FIGURES IN MILLIONS, AVERAGES PER YEAR)

	Dollar Total	1929 Prices	
		Percentage of : Gross Capital Formation	Net Capital Formation
1869–88	—104	—3·2	—5·3
1889–1908	— 48	—0·6	—1·1
1909–28	962	6·8	14·1

Finally we come to the wave of technical innovations which began in the 'nineties, inaugurating the era of electricity, chemistry and the automobile. However the timing of this phenomenon is interpreted, no-one will deny the far-reaching significance of this technological evolution ; and it must form part of any explanation of the change in the quality and origin of the inflow of migrants to the United States after the turn of the century.

The interplay of forces shaping the evolution of the Atlantic economy from the 'nineties to the First World War might be tentatively described as follows. The massive inflow into the U.S.A. of cheap labour from South and East Europe coincided with technical innovations which called for a widening rather than a deepening of the capital structure. These two developments proceeded hand in hand, and it is impossible to

[1]S. Kuznets *National Product since* 1869, (1946), p. 84.

say which was the cause and which the effect. The changing technique in the expanding industries entailed minute subdivision of operations and a wide adoption of automatic machines worked by unskilled men, women and juveniles. After 1900 the inflow of cheap labour from South-East Europe was so great that firms using the new technique of production must have driven out of the market many old firms committed to processes depending more on human skill.

We shall now consider the bearing of this on the failure of net immigration to U.S.A. from Great Britain to increase between 1900 and 1913. By the last decade of the nineteenth century, when the extensive mobility induced by the frontier had ended, the sons of the migrants who had come from Britain and North-Western Europe were consolidating their hold on the better-class jobs in a society which was becoming more stratified ; and any further immigrants from Britain would have to face formidable competition in both skilled and unskilled grades. The complementary relationship between the inhabitants of the new country and the newcomers from the old had given way to a state of rivalry. But this did not apply to the "new" immigrants from Southern and Eastern Europe. The native-born and the second generation Americans, having ascended to the managerial, professional, clerical and skilled posts, needed a growing mass of common labour to form the base of the socio-economic pyramid. Far from being a threat to the upper grades, the "new" immigrants bestowed prosperity on them. The keen competition was with the Negroes and the failures among the "old" immigrants and their children. The scope for direct social mobility—the opportunity for an individual to lift *himself* up the ladder—was contracting ; but there was still ample possibility for advancement from one generation to another—there were glittering prizes for the enterprising sons of humble immigrants. When these prizes began to appear illusory and the enormous volume of "new" immigrants became a threat to the prospects of the second generation, the representatives of organised labour became fervent advocates of exclusion as the only way of keeping America a land of opportunity for members of their class.

XII. Concluding Reflections.

1. Since a major part of British emigration in the nineteenth century was to the United States, any attempt to analyse its course involves an inquiry into the changing nature of the economic nexus between the United Kingdom and America. Most of the literature on this subject has been devoted to short-period fluctuations around the norm of economic activity, and much emphasis has been placed on the international character of the business cycle. Lord Beveridge, after an exhaustive investigation, commented on "the community of economic experience which has linked the United States of America and Britain, certainly for a hundred years, probably throughout the time of their political separation. They have swung from prosperity to adversity and back again together ; they have a common interest in discovering the causes of cyclical fluctuation and then inventing a cure." [1] If, however, we examine not the trade cycle but the long cycle, which has an equal claim to be regarded as a characteristic of economic growth, it is not true to say that Britain and America have had the same ups and downs. Evidence has been presented in this paper to show that the long cycle was not international : times of unusual activity in Great Britain were times of subnormal progress on the other side of the Atlantic and *vice versa*. Much research needs to be done into the forces responsible for minor secular fluctuations.

2. In interpreting the evolution of Western capitalism there is a great advantage in regarding the whole Atlantic community of nations as one economy made up of interdependent regions. As the wealth and population of the whole community was expanding under the impact of innovation and enterprise, the rhythm of growth in the parts was not harmonious and the balance of power between the regions underwent secular change. Long period evolution brings with it fundamental changes in the social structure and economic function of the regions ; but as the regions must strive to retain their entity as nations there must naturally be increasing interference with the free play of economic forces. Perfect

[1] Lord Beveridge : *Full Employment in a Free Society*, 1944, p. 285.

international fluidity (if such an anarchic state of affairs can be imagined) is obviously incompatible with the self-preservation of nations. As A. J. Balfour put it, "Nations could not be maintained, at least in their present shape, except through the accumulated effect of the various causes which in their sum total make up what may be called 'economic friction,' just as the continents on which they live are only prevented by cohesion and mechanical friction from merging in the ocean by which they are surrounded . . . it would be a most singular coincidence if (for example) every 'natural' cause which promoted the easy flow of capital and labour from area to area, should also promote the interests of particular nations, the number of whose population and the character of whose commerce are largely founded upon the partial immobility of these very partners in production." [1]

The key to what has happened to international migration in the twentieth century is to be found in the clash between the logic of secular growth and the self-interest of the separate nations and of the dominant social groups within them. The former required a continuance of the periodic shifts of population from east to west, but the New World on reaching maturity adopted a policy of exclusion.

3. From our angle of vision, it is possible to detect certain weaknesses in the usual account given of the long waves in economic development. Schumpeter, in his monumental work, sought to verify his model of the dynamics of capitalism by examining the behaviour of economic indices in three countries, the U.S.A., the United Kingdom and Germany. He takes each in turn and looks for evidence that their growth could be defined in terms of the long waves postulated by Kondratieff. According to Schumpeter the capitalist system evolved with a rhythm as indicated in his model, and the long-term fluctuations could be observed simultaneously in the history of the three countries. Significantly, however, he had to admit one outstanding exception. He observed that "England's economic history from 1897 to 1913 cannot, owing to the comparative

[1] Rt. Hon. A. J. Balfour, *Economic Notes on Insular Free Trade* (1903), pp. 4 and 6.

weakness of the evolution (in our sense) of her domestic industries, be written in terms of our model—the only case of this kind within the epoch covered by our material," [1] This is not the place to enter on a detailed critique of the work quoted ; but one would have thought that this exception would have worried Schumpeter more than it appeared to do, since England's role in the nineteenth century had been so pivotal. There might have been something wrong with the hypothesis. I suggest that, if one regards England, America and Germany as inter-dependent parts of a single economy and if the structure and function of each of these parts change as the whole economy expands, it is vain to expect the long-period behaviour of all three to be similar. One may also doubt whether Schumpeter was justified in giving so much prominence to his "Kondratieffs" ; an intensive analysis of the 20-year cycle would have revealed more than one important exception to his model.

4. Our analysis has indicated the way in which the swings of emigration and foreign investment reacted on the British economic system. Britain was casting her bread upon the waters, knowing that it would return to her in abundance after many days. Investing in new countries was a necessary and profitable business but it could not be kept up at an even rate. In one period the marginal efficiency of investment abroad governed the level of activity at home : in the next the marginal efficiency of domestic investment (together with a greater supply of loanable funds) would dominate the scene, while at the same time the fruits of the seed sown in the previous season would be garnered in the form of a lower cost of living for consumers and a fat bonus for investors. Hence the illusion of a "great depression." Economic progress, while bringing benefits to the majority, was as painful to some industries and interests in the harvesting season as it had been to others in the sowing season. Entrepreneurs and workers whose prosperity was bound up with foreign investment and the exports that went with it naturally complained loudly of

[1] J. Schumpeter, *Business Cycles*, (McGraw Hill, New York, 1939,) Vol. I, p. 435.

depression when the centre of gravity shifted to home investment. The irony of it all was that the general level of employment and real wages and labour's share of the national income were usually higher when the harvest was being reaped than when the seed was sown.

5. There is reason to think that the Atlantic economy passed through a deep structural change in the 'nineties. This has a direct bearing on the peculiar course of economic development in Britain from 1897 to 1913 to which Schumpeter referred. The slump in capital exports in the 'nineties was different from previous slumps in one important respect : America was now so large and rich that she would not need to borrow much more from London. Very soon she was to begin her career as a great creditor nation. The British investor reacted as in the past by putting more money into his own country ; the rate of interest (average yield of consols) fell from 3·20 in 1875 to 2·76 in 1900, and labour's position improved absolutely as well as relatively. Meanwhile, the last three decades of the century saw a new round of colonial expansion which added to the Empire an area of 4,754,000 square miles, with an estimated population of 88 million.[1] A renewed zeal for capital exports—mainly to countries other than the United States—took hold of the English investing class in the early years of the new century, and the domestic rate of interest rose from 2·76 in 1900 to 3·39 in 1913. By 1913 one-half of Britain's foreign investments were in the Empire, one-fifth in the United States, just under a fifth in Central and South America, and only one-twentieth in Europe.

We saw that in previous booms in foreign lending there was a tendency for labour's relative share to decline ; but in the nineteenth century the groundswell was so strong that this was not serious. For example, between 1876 and 1888 wage earners benefited by a fall of 16% in the cost of living. It was different after 1900. The new orgy of oversea investment was taking place in a setting which was changing to Britain's detriment ; the terms of trade were running against her and the cost of living was going up. This time the clash of interest

[1] J. A. Hobson, *Imperialism* (1938), p. 18.

between labour and capital became chronic. Real wages were falling while profits were rising fast. At a time when productivity was being transformed in the United States and Germany under the influence of innovations in electricity and chemistry, British investors showed little interest in re-equipping industries at home. London was so used to the role of the world's rentier that the play had to go on. The technical efficiency of British industry as well as the welfare of the wage-earners would have been improved in the decade ending in 1913 if the passion for foreign lending and the large-scale emigration which it entailed had been curbed and the domestic rate of interest reduced to the level necessary for full employment of home resources. Things were different in Germany and Sweden. These countries took full advantage of the technical revolution of that time; home investment and the physical productivity of their industries rose rapidly between 1900 and 1913; and total net emigration from both countries was comparatively small. The relative failure of British enterprise to partake fully in the technical progress of the first decade of this century is one important reason why the British economic system has suffered so much from bottlenecks, *e.g.* electrical generating capacity, now that it has full employment in peace time.

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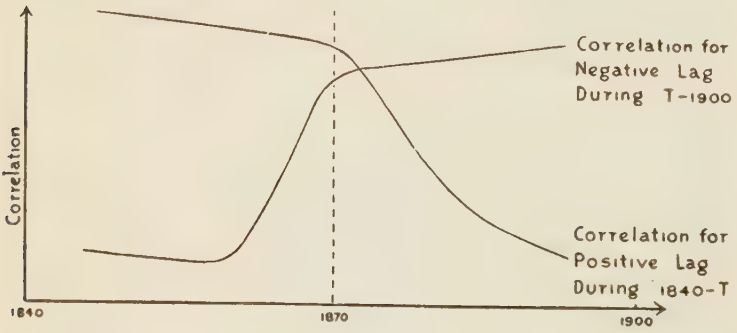
APPENDIX I

AN EXAMINATION OF IMMIGRATION TO U.S.A., 1831-1913, BY A SWITCH-LAG ANALYSIS

This Note describes (*a*) the method used to demonstrate the existence of a switch of lag, and (*b*) the results achieved.[1]

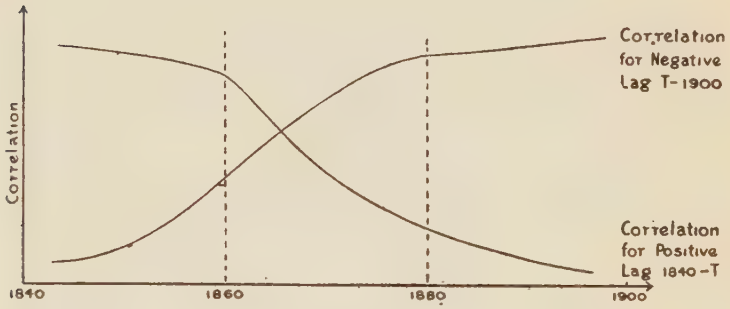
I. The Original Method

We may begin by considering a simple and hypothetical case in which up to 1870 data A lag one year behind B, while after 1870 data B lag one year behind A. If our data extend from 1840 to 1900 then the maximum correlation coefficient for 1840-1870 will be for a lag (defined to be positive) of one year, while for 1870-1900 it will be for a lag (negative) of one year. If we now calculate the correlation coefficient for 1840 to 1871 with a one-year positive lag, we may expect the coefficient to be lower than that for 1840-1870, for while in the latter case the one-year positive lag existed throughout the whole series, in the former case it definitely does not exist in the last year. For 1840-1875, the coefficient should be much lower than that for 1840-1870, since the one-year positive lag has become a less good description of the relationship between these series. Similarly the coefficient for 1865-1900 with a one-year negative lag should be lower than that for 1870-1900. The switch-year 1870 would thus be a year after which the correlation coefficients for a one-year positive lag for the period 1840—T would markedly decrease as T moved away from 1870, while that for a one-year negative lag for the period T—1900 would increase as T approached 1870. Graphically the coefficients could be represented roughly as below.



[1] *I am indebted to my Research Assistant, Mr. J. Parry Lewis, B.Sc., for his preparation of this Appendix.*

In the more complicated, and also more real, case where the switch year is replaced by a switch range, say 1860-1880, during which the lagging progessively changes from one year positive to one year negative, the above figure could reasonably be expected to appear rather more like the one below, where the beginning of the switch-range is marked by the maximum value of the Positive Lag 1840—T coefficient, and the end of the switch-range by the maximum value of the Negative Lag T—1900 coefficient.



Values of T

Returning to the graphs of deviations from trend we see that the lags—as far as we can determine them—are of not more than three years. In order to be on the safe side, however, the possibility of lags up to six years either way was admitted. The squares, products and sums necessary to determine the correlation coefficients for the periods 1831-60, 1831-62, 1831-63 . . . 1831-1899 and 1861-1913, 1862-1913 . . . 1900-1913 with lags, for each period, ranging from +6 years to —6 years were then tabulated.

Careful examination of the table revealed that for the pre-switch period, the coefficient for Railways lagging behind Immigration by one year and by two years would be higher for the periods beginning in 1831 than would the coefficients for other lags for the same periods. Accordingly only these were calculated. Similarly only lags of one and two years (Immigration now behind Railways) were calculated for the post-switch period.

The resulting coefficients are shown on the accompanying graphs (Figures IX and X) which appear to indicate that a switch commences in 1864 and is completed by 1890. However the peculiar fluctuations of the graphs could not be ignored, and compelled a closer examination of the figures appearing in the table. The ensuing investigation suggested a modified form of analysis which would be more accurate and entail rather less work.

II. The Modified Method

Consider the formula

$$r = \frac{N\Sigma xy - \Sigma x.\ \Sigma y}{\left[\left\{N\Sigma x^2 - (\Sigma x)^2\right\}\left\{N\Sigma y^2 - (\Sigma y)^2\right\}\right]^{\frac{1}{2}}}$$

If we use this to calculate r for no lag, and then for a one-year positive lag, there is going to be comparatively little change in the values of Σx. Σy, $(\Sigma x)^2$, $(\Sigma y)^2$, Σx^2 and Σy^2. The largest difference is likely to be in the term Σxy for $\Sigma x_t y_t$ has been replaced by $\Sigma x_t\, y_{t-1}$

This suggests that if a column of totals for Σxy for a certain lag gives consistently higher values than the totals of some other column, while the changes in the values of Σx, Σy, Σx^2, Σy^2 etc. that are necessitated by the use of this particular lag are clearly of less consequence than the change in Σxy, then the column that gives the highest Σxy corresponds to the lag that gives the highest coefficient.

Consider the table below, which is an extract from the worksheet drawn up, as for the original method, for Railway Miles Added Annually in the U.S.A., and Immigration from Great Britain to the U.S.A.

Year	Values of xy and of Σxy for lags of								
	Immigration One Year Before Railway			Immigration Two Years Before Railway			Immigration Three Years Before Railway		
	+	—	Σ	+	—	Σ	+	—	Σ
1846 ...		*	—3,037	483		—7,364	*		—1,403
7 ...		*	—3,106		41	—7,405	*		—1,376
8 ...		*	—4,077		1061	—8,467		*	—2,012
9 ...	*		745	1,407		—7,059	*		—474
50 ...	*		14,057	6,210		—849	*		1,338
1 ...	*		26,700	16,018		15,169	*		8,811
2 ...	*		36,170	10,398		25,569	*		21,984
3 ...	*		42,922	13,172		38,739	*		36,447
4 ...	*		43,477	774		39,513	*		37,946
5 ...	*		46,427	1,058		40,571	*		39,567
6 ...	*		55,682	16,874		57,444	*		45,620
7 ...	*		58,412	3,871		61,315	*		52,677
8 ...	*		62,646	22,53		63,568	*		55,866
9 ...		*	62,499	632		64,200	*		56,203
60 ...		*	62,418		49	64,151	*		56,417
1 ...	*		63,848	1,853		66,004	*		57,544
2 ...	*		66,795	1,284		67,288	*		59,208
3 ...	*		68,827	2,551		69,839	*		60,319
4 ...		*	65,004	2,694		72,533	*		63,701
5 ...		*	63,938		2,865	69,668	*		65,721
6 ...		*	61,406		661	69,008		*	63,944
7 ...		*	59,954		1,151	67,856		*	63,644
8 ...	*		60,029	856		68,712	*		64,323

Note : (1) Except in the central columns the values of xy have been replaced by an asterisk in the properly signed column.

(2) "Σ" for a particular year denotes the sum of the values of xy from the year 1831 (or, if a one-year lag, from 1832, etc.).

For a lag of one year, the period 1849-1863 is positively correlated (for the values of Σx, Σy etc. were found to be, in fact, comparatively unimportant, although they were never allowed to go out of sight). The period for the one-year lag is defined thus because :

(1) the years immediately before 1849 have negative values for xy and thus lower the coefficient noticeably if the period is extended before 1849;

(2) the years before 1846 (not shown) alternate in small groups of three or four years negative, and then a similar positive period;

(3) there is only a short period of negative correlation within 1849-63 and then the negative values are small;

(4) after 1863 there are large negative values for xy;

(5) while 1868 marks the beginning of a fairly long period of positive xy this period is described better by a lag in a different direction.

Similarly for a two-year lag, the period 1849-1864 is positively correlated.

For a three-year lag, we define the period as 1849-1865. The single negative xy in 1848 is held to mark the beginning of a period because

(1) it is high;

(2) the preceding positive values are much lower;

(3) earlier years behave as described above.

We have thus isolated a definite period of positive correlation that begins in 1849 and ends between 1863 and 1865. That there are similar periods earlier or later is of no consequence ; here is a period whose correlation is made less good if it be extended either way. Having isolated it, we may investigate its lag.

To determine the lag we note that the respective totals for these periods are 68,827—(—4,077) = 72,904 ; 72,533—(—8,467) = 81,000 ; 65,721—(—2,012) = 67,733.

Clearly the biggest total Σxy is for a two-year lag. However, this is for 1849-1864, while the smaller value for a one-year lag is for 1849-63. Despite this, the two-year lag seems best as for the identical periods 1849-1863 the total is higher for two years than for one year. Furthermore, with very few exceptions, the totals for sub-periods within 1849-1863 are higher for a two-year lag than for a one-year or three-year lag.

We conclude that probably a two-year lag best describes this period. All the time, of course, the other terms involved in computing r were borne in mind. It is, however, quite safe to say that even if some peculiarity of the other terms has escaped attention, the best lag is of one or two years—probably two.

Accordingly the values of r were computed for the probable best lag (two years) and for the probable second best lag (one). The results were :

1849-64	2 year lag	Immigration first	$r = 0{\cdot}898$
1849-63	1 year ,,	,, ,,	$r = 0{\cdot}700$

The period 1865-1870 was difficult. For any short lag, of say up to three or four years, it gave a negative correlation, and that not very high. Greater lags were shown, by examining the graphs, to have the effect of omitting peaks that were obviously important. And for the time being this short period of disorder was omitted.

The rest of the period was examined in a similar manner. The disorderly period before 1849 was omitted as a period about which it was not possible to make any definite statement.

1869-83 gave Σxy highest for no lag ; second highest for a lag of one year Rail First. 1871-83, 1872-83, etc. gave Σxy higher for the one year lag than for no lag. The beginning of the period was thus put at 1871. The end of the period, 1885, was chosen because of the tendency of the totals to suggest a higher correlation, but for the same lag, for the period beginning 1884, and ending around 1900. The date 1883 is thus a division of value of correlation rather than of lag. The lag period, in full, is 1871 to about 1900. The totals of Σxy for 1901-1913 for lags of 1, 2 and 3 years were fairly close. The highest totals were for 1899-1913.

The actual procedure was aided by the device shown below. The numbers give Σxy for the period mentioned. Highest totals for the predetermined periods are boxed, and others to be calculated are marked with an asterisk. That a total has not been put down means simply that it would obviously give a much lower value of r.

Lag of Immigration First by		No Lag	Lag of Rail First by			
2 years	1 year		1 year	2 years	3 years	4 years
1849–62 75,754	1849–62 70,872	1849–62 60,735	1850–62 52,919			
1849–59 72,667*	1849–58 66,723	1850–62 50,398	1850–57 53,431*			
1849–64 81,000*	1849–63 72,904*	1849–57 56,389*				
		1869–83 53,528	1868–83 51,798*			
		1871–83 39,357*	**1871–83 45,235**	1871–83 35,440*		
		1884–88 14,812*	**1884–88 19,963**			
		1884–98 32,933	**1884–98 37,953**			
		1901–13 22,957	**1901–13 29,395**	**1901–13 27,630**	**1901–13 30,427**	
		1899–13 25,074	**1899–13 35,459**	**1899–1913 35,693**	**1899–1913 39,489**	**1899–1913 33,248**

In the whole of this analysis, reference was constantly made to the graphs of the percentage deviation from trend in order to check the plausibility of particular results. At the same time, an eye was kept on values of Σx^2, etc.

The analysis was repeated for other pairs and the results are shown below.

III. Results

Not every coefficient is shown here; only the best have been given. Where a statement such as "1 year (or 0)" is made it means that a 1 year lag gives a higher coefficient than a zero lag but not much higher.

In pairs containing Railway Miles Added where the lag is "1½ years," it should read as "one year or two years according to the analysis with an addition or subtraction of 6 months to allow for the difference of 6 months between the statistical years of the two series in the period concerned."

Sometimes the date given is only approximate; it may be one or two years out. The periods have been separately determined for each pair.

1. *Railway Miles Added in U.S.A. v. Immigration to U.S.A. from G.B.*

1849-64	2 year lag	Immigration First	$r = 0{\cdot}898$
71-c88	1½ ,, ,,	Rail First	0·861
89-98	1½ ,, ,,	,, ,,	0·922
1899-1913	3½ ,, ,,	,, ,,	0·787

2. *Bituminous Coal Output in U.S.A. v. Immigration to U.S.A. from G.B.*

1851-62	2 year lag	Coal First	0·818
71-84	½ ,, (or —½ year)	Immigration (or Coal) First	0·830
85-98	½ ,, (or 1½ ,,)	Coal First	0·864
99-13	4½ ,, lag	Coal First	0·942

3. *Railway Miles Added in U.S.A. v. Bituminous Coal Output in U.S.A.* (done as a check)

1853-67	3 year lag	Coal First	0·849
71-83	1 ,,	Rail ,,	0·896
85-c00	1 ,, (0, 2)	Rail ,,	0·771
01-13	0 ,, (1)	Coal ,,	0·496

4. *Railway Miles Added in U.S.A. v. Immigration to U.S.A. from Ireland*

1849-64	1 year (O)	Immigration First	0·558
71-84	1½ ,,	Rail First	0·856
85-07	1½ ,,	,, ,,	0·799

(*Note* : the period 1871-1907 was divided at 1884 for curiosity, the periods for other pairs having been remembered. This is the only case in which the periods of one pair have been used in the analysis of another pair).

5. *Railway Miles Added in U.S.A. v. Immigration to U.S.A. from Europe*

1849-61	2 year lag	Immigration First	0·671
69-83	1½ ,, (½)	Rail First	0·837
84-00	1½ ,, (2½)	,, ,,	0·789
01-13	½ ,,	,, ,,	0·621

6. *Immigration into U.S.A. from G.B. v. Merchandise Imports into U.S.A. (at constant prices)*

1850-64	3 year lag	Immigration First	0·800
1871-91	½ ,, lag	Imports First	0·749

IV. Conclusion

The general agreement between these results, and especially the agreement between the results of the first three pairs, speaks well of the method that has been used, especially when the limitations of yearly data as a means of finding the length of a lag are borne in mind.

It seems that the period 1831-1913 * may be subdivided (approximately)

* *Note* : This is not quite true. Only the first two pairs were worked from 1831-1913 parabolas. The other pairs were for 1841-1913 parabolas.

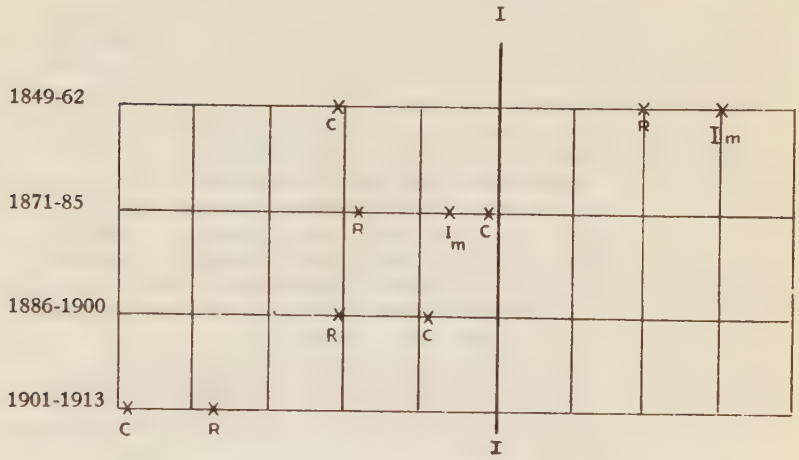
1831-48	No marked correlation with reasonable lags.
1849-62	Immigration precedes Railway Building by about two years, and is itself preceded by Bituminous Coal Output by about another two years.
1863-70	An uncertain period due (*see graphs*) to comparative diminution of economic activity during the war.
1871-85	A reversal of lags : Railway precedes Immigration by about 1½ years and precedes Coal by about the same period.
1886-1900	The Rail-Immigration lag is unchanged but Coal again precedes Immigration.
1901-13	Suddenly Immigration lags much more behind Rail (3½ years) and behind Coal (4½ years) which is now before Rail.

The method is superior in its modified form.

(1) It enables periods to be defined more accurately and facilitates the location of periods of different lags in the same direction. To interpret the graphs of the coefficients with equal accuracy would demand considerable skill.

(2) It is quicker than the original method.

The results just obtained may be illustrated thus :



I = Immigration from G.B.
R = Rail
C = Coal
Im = Merchandise Imports

Note on Significance :

It seems that the Civil War saw a switch of lagging. Before it, Immigration followed Coal and preceded Rail. After it, for the rest of the century at least, Rail preceded both Coal and Immigration.

The correlation coefficients show significant correlations. A problem yet to be solved is whether, for the period 1849-1863, the highest correlation coefficient obtainable for a lag one way is significantly different from the highest (but lower) correlation coefficient for the same period with a lag the other way. This does not appear to be the same as the usual significance of a difference between correlation coefficients because of the interdependence of the variables x and y in one case with those in the other. But the problem has yet to be seriously tackled.

APPENDIX II

SOURCES OF STATISTICS USED IN THE CHARTS

Figures I & II. Immigration to U.S.A. from Europe, Great Britain, Germany, Ireland, and Scandinavia, 1831-1913. *Historical Statistics of the United States*, 1789-1945. (U.S. Dept. of Commerce, Washington, D.C., 1949), pp. 33-4.

Figure III. Index of British Share Prices, 1840-1913. P. Rousseaux, *Les Mouvements de Fond de l'Économie anglaise*, 1800-1913 (Louvain, 1938), p. 272. For the period after 1867 the figures are based on K. C. Smith and G. F. Horne, "An Index Number of Security Prices, 1867-1913," Royal Economic Society Memorandum 47, 1934.

Quantum of British Home Investment 1870-1913. A. K. Cairncross, *Home and Foreign Investment in Great Britain* 1870-1913 (unpublished thesis, University of Cambridge Library), Table XII. I am indebted to Professor Cairncross for his kind permission to use statistical material from his thesis, a copy of which he was good enough to allow me to borrow.

British Foreign Investment (at 1865 prices), 1865-1913. Paul H. Douglas, "The Growth of Capital in Great Britain, 1865-1909," *Journal of Economic and Business History*, August, 1930.

Figure IV. Railway mileage added annually in U.S.A. to 1890, *Historical Statistics of the United States*, p. 200; 1890-1913, *Statistical Abstract of the United States*, 1922, p. 310.

Figure V. Outward Movement of British Passengers to U.S.A., 1856-1913. I. Ferenczi and W. F. Willcox, *International Migrations, Vol. I. Statistics* (National Bureau of Economic Research, Inc., New York, 1929), pp. 636-7. Quantum of Building Investment in Great Britain, 1870-1913. A. K. Cairncross, *op. cit.*

Index of New Building in the United States, 1856-1913. Clarence D. Long, Jr., *Building Cycles and the Theory of Investment* (Princeton University Press, 1940), pp. 226-7.

Figure VI. National Income of the United Kingdom per head at 1900 prices, 1870-1913. A. R. Prest, "National Income of the United Kingdom, 1870-1946," *Economic Journal*, March, 1948, pp. 58-9, Col. 9.

Real Wages in the United Kingdom, 1870-1913. A. L. Bowley, *Wages and Income in the United Kingdom since* 1860 (Cambridge University Press, 1937), pp. 30 and 34.

Level of Employment. Inverted percentages of trade unionists unemployed, 1870-1913. A. C. Pigou, *Industrial Fluctuations* (Macmillan, 1927), pp. 353-4.
Net Outward Movement of British Passengers from the United Kingdom, 1870-1913. Ferenczi & Willcox, *op. cit.*, p. 641.
Capital Exports and Total Investment, 1870-1913. Cairncross, *op. cit.*, Tables 14 and 21.

Figure VII. Wages Bill, Profits and National Income in the United Kingdom, 1870-1913. A. R. Prest, *loc. cit.*, p. 57.

Figure VIII. Bituminous coal output in U.S.A., 1840-1913. *Historical Statistics of the United States*, p. 142. Total British Exports (at constant prices), 1840-1913. W. Schlote, *Entwicklung und Strukturwandlungen des englischen Aussenhandels von 1700 zur Gegenwart* (Jena, 1938), Tables 9 and 14.
New Building in London, 1856-1913. District Surveyors' Fees for new building in London. E. W. Cooney, "Capital Exports and Investment in Building in Britain and the U.S.A., 1856-1914," *Economica*, November, 1949, p. 354.

Note : Considerations of space and expense have unfortunately made it necessary to omit most of the original data and parabolas used in this study. They will appear in the forthcoming book.

FIGURE I

IMMIGRATION TO THE U.S.A FROM

—— G B ---- Germany. -·-·- Europe

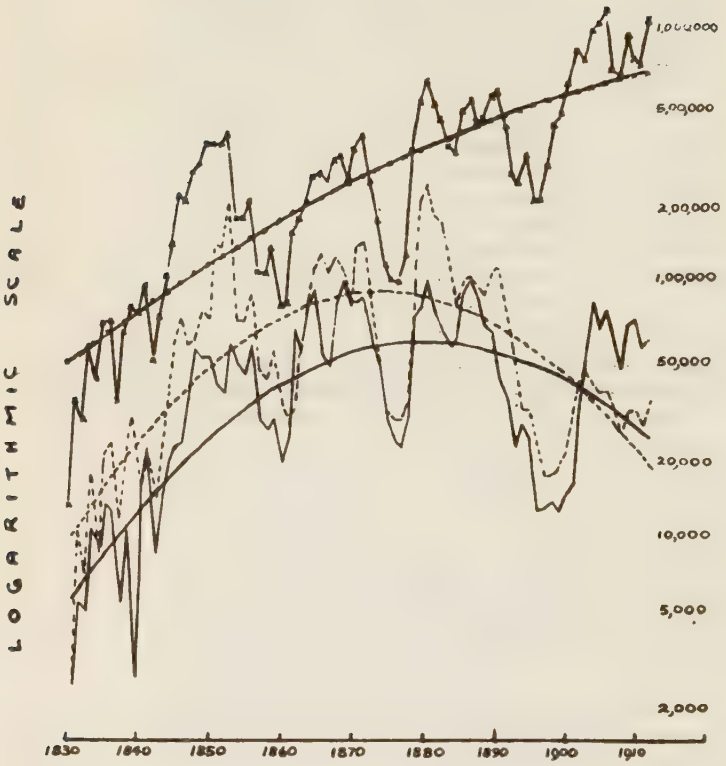


FIGURE II

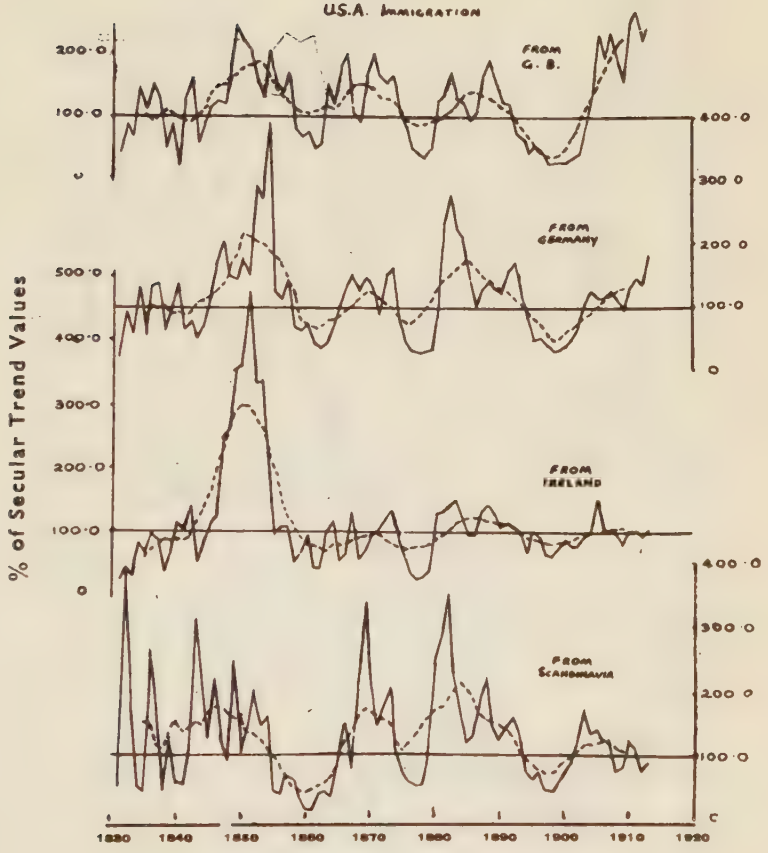

U.S.A. IMMIGRATION
% of Secular Trend Values
FROM G. B.
FROM GERMANY
FROM IRELAND
FROM SCANDINAVIA
200·0
100·0
0
500·0
400·0
300·0
400·0
300·0
200·0
100·0
0
1830
1840
1850
1860
1870
1880
1890
1900
1910
1920

FIGURE III

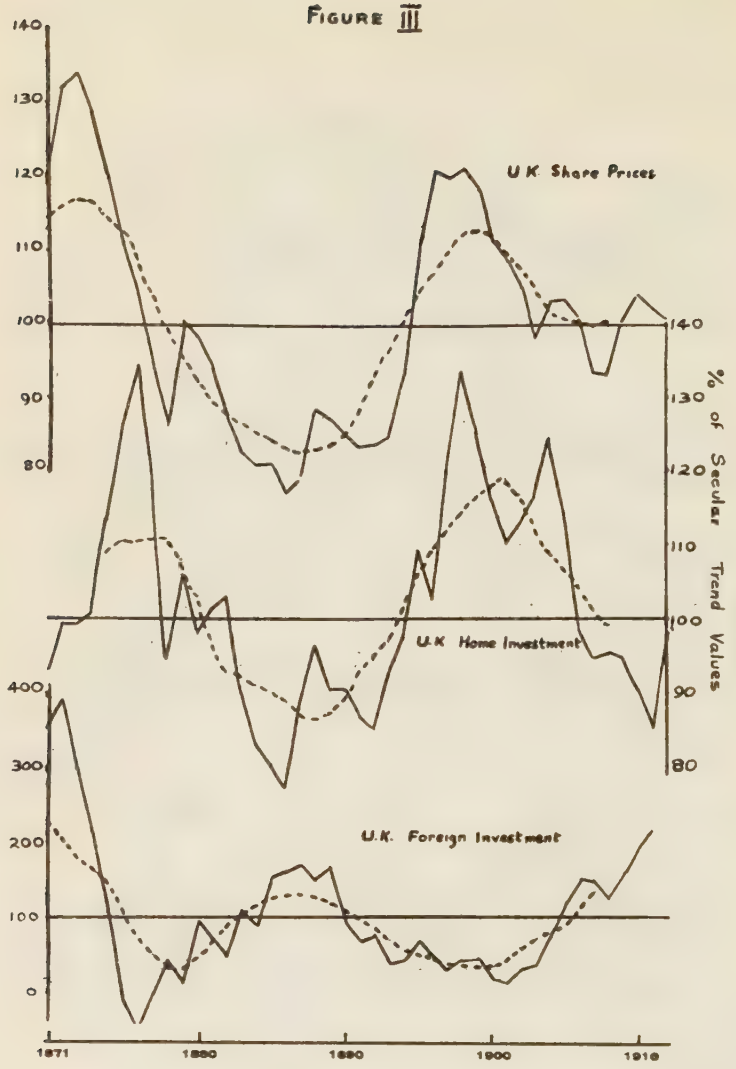

140
130
120
110
100
90
80
U.K. Share Prices
U.K. Home Investment
% of Secular Trend Values
400
300
200
100
0
U.K. Foreign Investment
1871
1880
1890
1900
1910

FIGURE IV

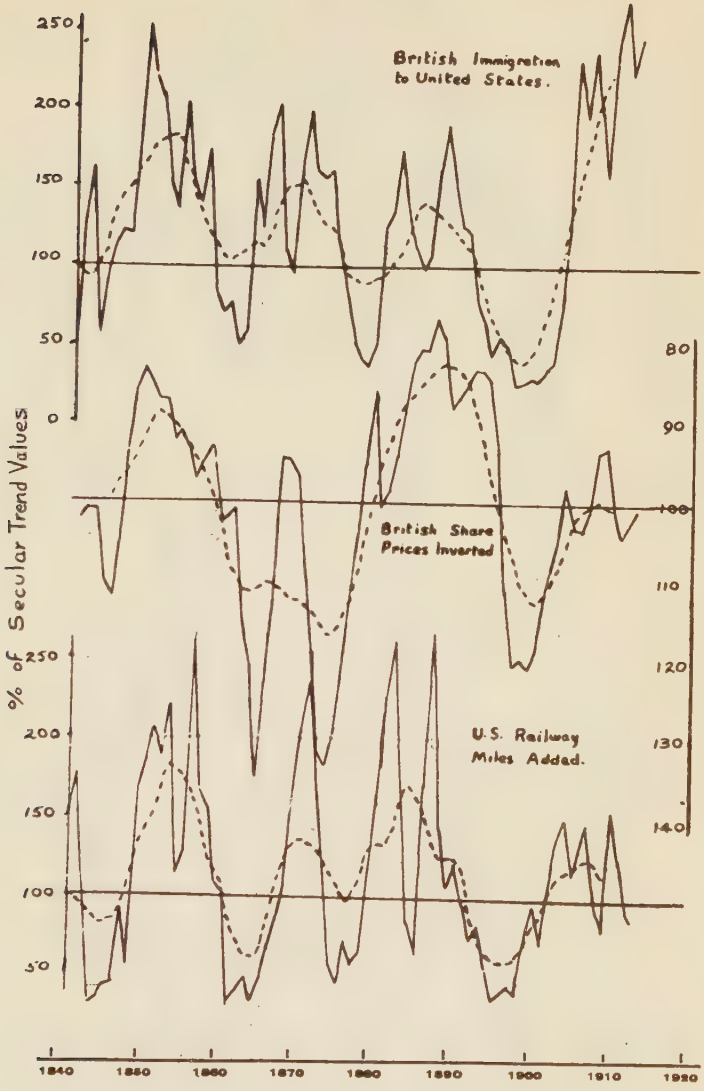

British Immigration to United States.
British Share Prices Inverted
U.S. Railway Miles Added.
% of Secular Trend Values
250
200
150
100
50
0
80
90
100
110
120
130
140
1840
1850
1860
1870
1880
1890
1900
1910
1920

FIGURE V

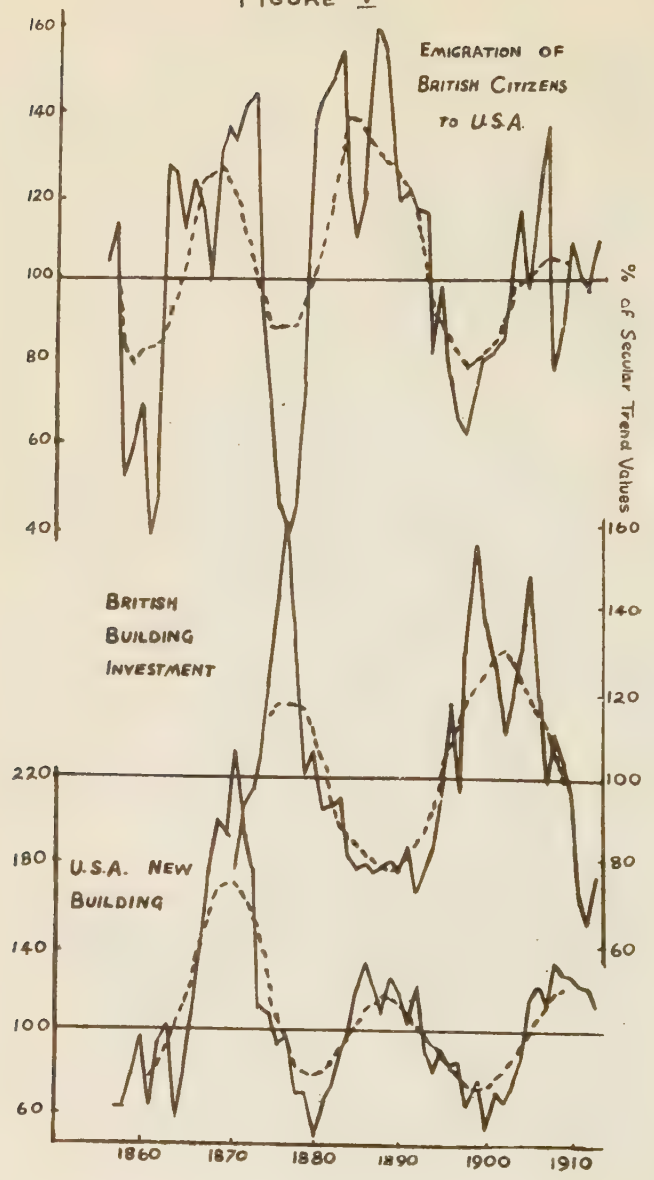

EMIGRATION OF
BRITISH CITIZENS
TO U.S.A.
BRITISH
BUILDING
INVESTMENT
U.S.A. NEW
BUILDING
% of Secular Trend Values
160
140
120
100
80
60
40
220
180
140
100
60
1860
1870
1880
1890
1900
1910

FIGURE VI

UNITED KINGDOM

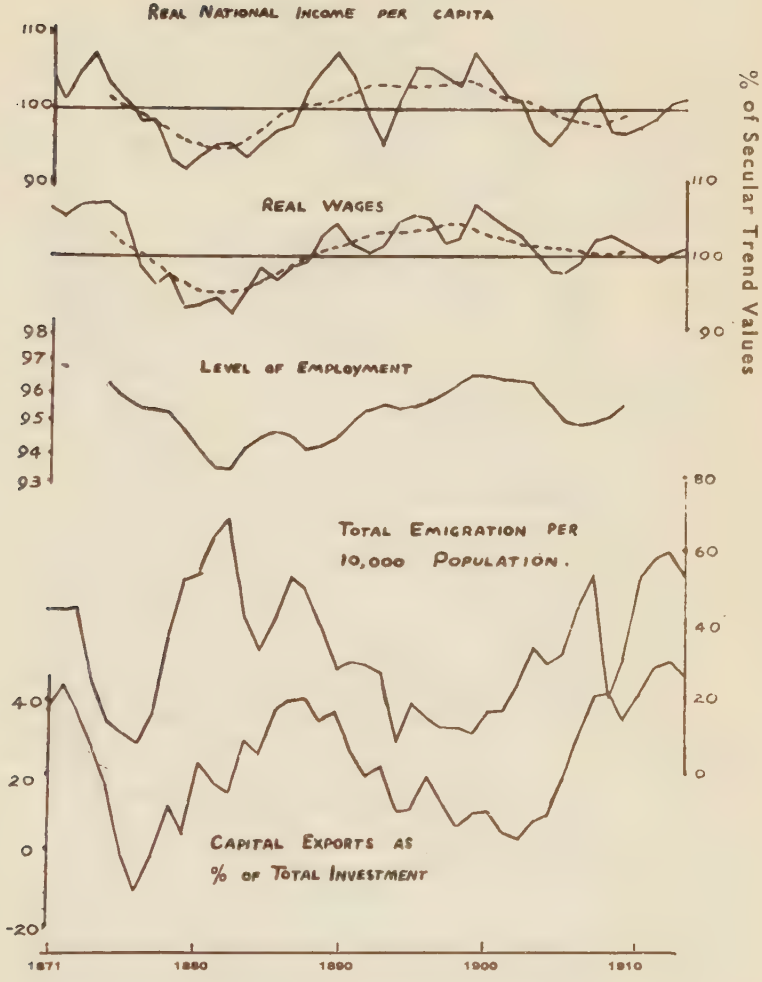


FIGURE VII

UNITED KINGDOM

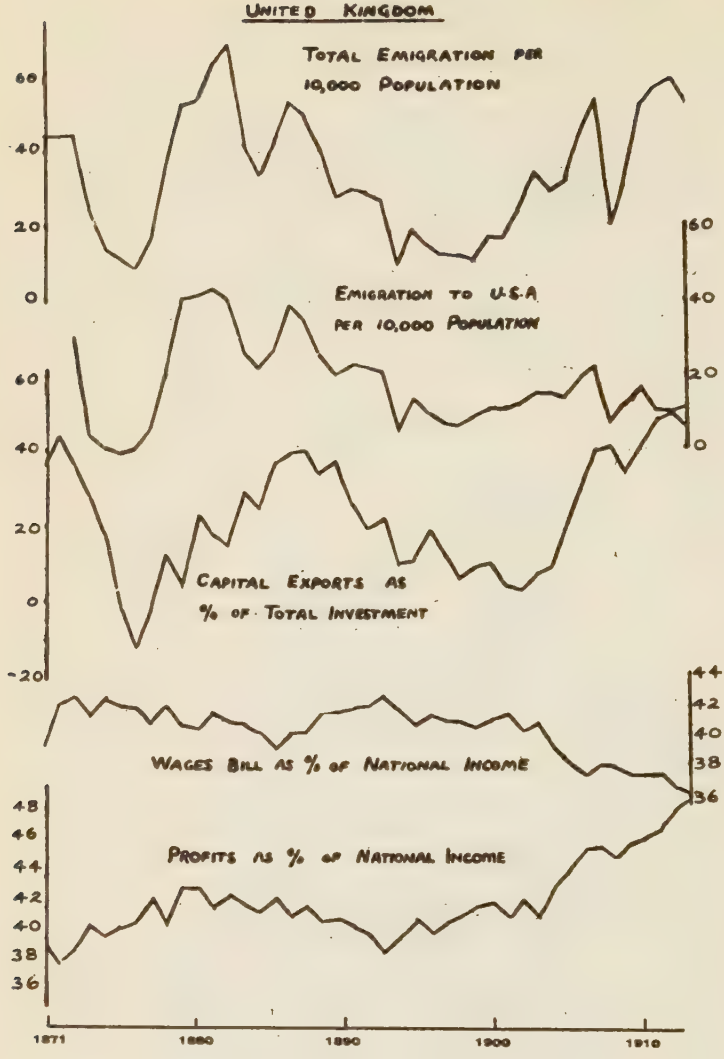
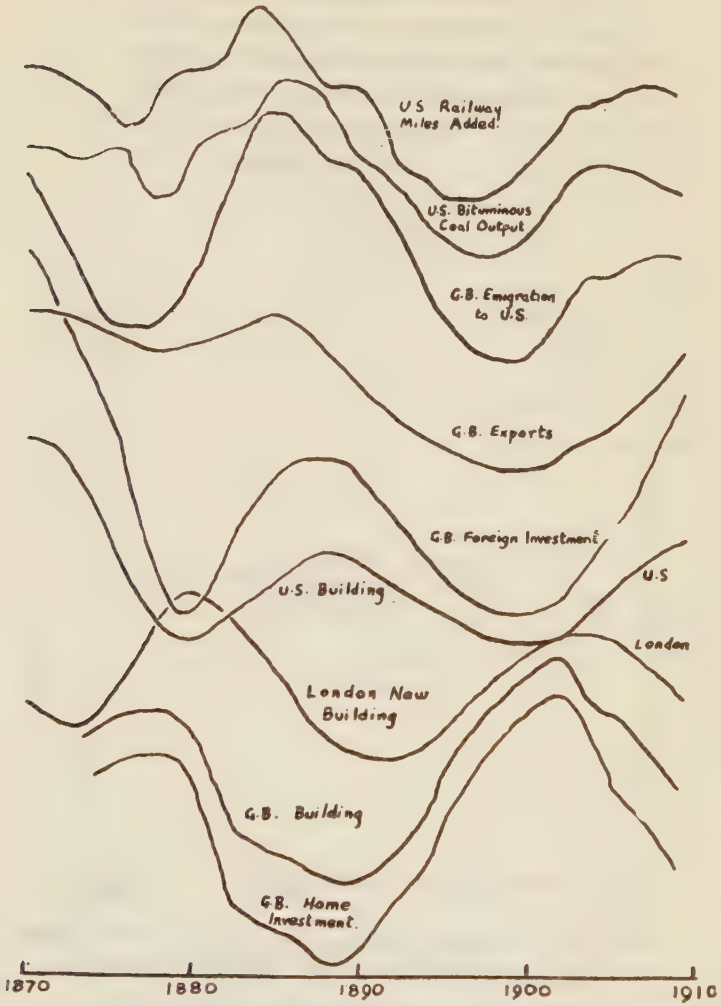


FIGURE VIII

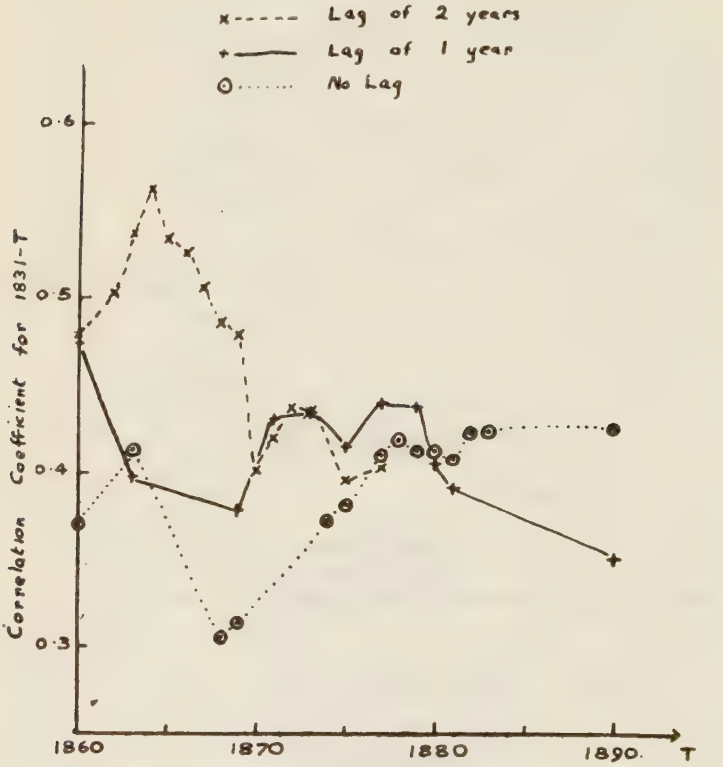
9 YEAR MOVING AVERAGES THROUGH DEVIATIONS FROM TREND



NOTE Only the turning-points, not the relative amplitudes, of these curves are significant.

FIGURE IX

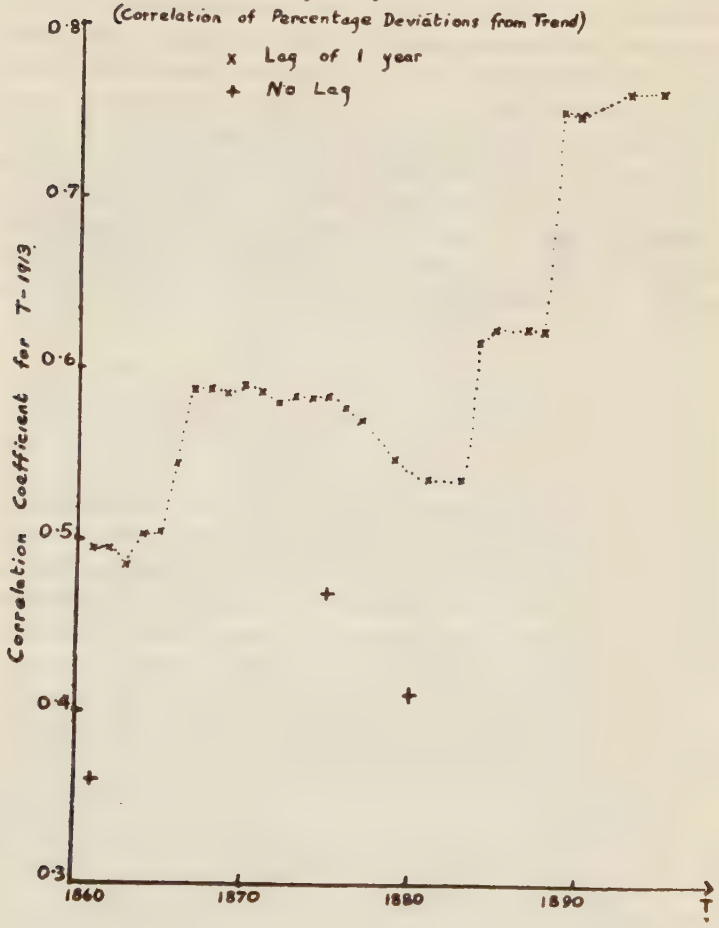
Correlation Coefficients for Various Lags for Periods 1831 – T for Railway Miles Added in U.S.A. following Immigration from G.B. (Correlation of Percentage Deviations from Trend)



NOTE: In this and the accompanying diagram no significance should be attached to the lines joining the marked points, which are simply to aid the eye.

FIGURE $\overline{X}$

Correlation Coefficients for Various Lags for Periods T-1913 for Railway Miles Added in U.S.A. preceding Immigration from G.B. (Correlation of Percentage Deviations from Trend)



World Trade in Manufactured Commodities, 1899-1950[1]

Over the last hundred years, or so, the gradual industrialisation of different areas of the world has led to significant changes in the nature of the demand for exports of manufactured commodities. It is a well established proposition that industrial equipment and modern means of transport considerably gained in relative importance at the expense of a number of consumer goods, notably textiles. It is also well known that, in the course of time, the old manufacturing nations exhibited greatly varying degrees of adaptability to this process. It was the purpose of this investigation to give a clearer picture of these changes in world demand for exports and in the competitive position of the leading manufacturing nations of the world by means of a comparative statistical study of the relevant trends over the last five decades.

I

In order to analyse the changes in the composition of trade in manufactured articles five "representative" years have been chosen : 1899, 1913, 1929, 1937 and 1950. The first four are peak years of prosperity, while 1950—with the significant recovery of German and Japanese exports and a prosperity not entirely based on re-armament—is the best post-war year so far, for purposes of comparison. Manufactured commodities are classified into sixteen groups, and changes in the percentage share of each group in world trade form the basis of analysis.

As an approximation to World Trade in manufactured commodities exports of eleven countries are taken which,

[1]The author is very grateful to Professor W. Arthur Lewis for his help in drafting this article and for his most valuable and stimulating guidance and advice ; he wishes to express his thanks for kind help and assistance to Mr. Farmer, Librarian of the Cotton Board, Mr. P. A. King, Librarian of the Royal Statistical Society, the Commercial Councillor of the French Embassy and Mme. Grehan, and Miss Grieves of the American Consulate in Manchester. The author also wishes to acknowledge gratefully the very efficient computing work done by Mrs. Bowett and Mrs. Fish.

according to League of Nations data[1], from 1901 to 1938 consistently accounted for some 80-85 p.c. of world total trade in these products. These countries are :

(1) United Kingdom,
(2) United States,
(3) France,
(4) Germany,
(5) Belgium,
(6) Italy,
(7) Sweden,
(8) Switzerland,
(9) Canada,
(10) India,
(11) Japan.

If Holland, Czechoslovakia and Austria were added to this list we should be able to claim that all important [2] exporters of manufactured products up to the outbreak of the second world war were included. Holland has, however, had to be excluded, because up to the year 1921 its trade statistics do not distinguish between exports of domestic produce and foreign goods in transit through Dutch territory ; and the latter were so large a part of its trade that their inclusion in the earlier years would vitiate comparisons. Both Czechoslovakia and Austria are excluded because of the absence of figures for 1899 and 1913.

One of the most difficult problems to solve was that of classification. On the one hand it was necessary to give a precise definition of the term "manufactured commodities" ; on the other hand the classification into groups had to be both analytically significant and applicable to the existing statistical material.

With some modifications commodities considered as manufactured are those included in Class III ("Articles Wholly or Mainly Manufactured") of the British Export List, 1950. The major change introduced is the addition of alcoholic drink and manufactured tobacco and the exclusion of coke and refined petroleum.[3]

[1] Cf. L.o.N. *Industrialisation and Foreign Trade*, Tables VII and IX ; the figures stated there refer, as a rule, to quinquennial averages, but 1913 and 1930 are specified separately.

[2] According to L.O.N. data (cf. *Industrialisation and Foreign Trade*, Tables X and XII) no other country in the inter-war period exported manufactures at a rate exceeding $100 mil. per annum.

[3] For more details cf. Appendix I.

As for the grouping of commodities, a special classification has been made. Three criteria are usually suggested for classifying commodities : (*a*) the nature of the material, (*b*) the stage of production, or (*c*) final use. A classification based on one of these criteria only, appears neither practicable nor relevant, and all national and international statistics represent some compromise between these three principles.

The League of Nations Committee of Statistical Experts [1] suggested that the criterion of the nature of material should be given greatest weight except for more elaborate manufactures where the principle of use was more appropriate. This approach, which largely corresponds to the actual structure of industry, is very helpful for our purpose. Since, however, our primary interest is in the international location of industry, our classification must meet the test of relevance to the principles of location. In practice, this means that we should not include in any one group articles fundamentally differing in their processes of production, or requirements of skill, capital or raw materials. For example, in the metal industries, the crude products of smelting ores must be distinguished from the finished products made from manufactured materials, since a country without ore deposits is comparatively at a much greater disadvantage in smelting, casting or rolling-mill production than in manufacturing finished goods from imported bars, plates or wire. In general, any given articles should not be included in the same group, if a country which could produce one of them efficiently would face great disadvantages if it sought to manufacture another.

The following is the classification used in this study. It is shown in greater detail in Appendix I.

Gp. 1 : Iron and Steel, intermediate products and finished manufactured materials.

Gp. 2 : Non-Ferrous Metals, intermediate products and finished manufactured materials.

Gp. 3 : Chemicals, Etc., including allied products, such as dyes, colours, medicines, soap, perfumery, etc.

[1] Cf. League of Nations (1938). Minimum List of Commodities for International Trade Statistics, Annexe II.

Gp. 4 : NON-METALLIFERROUS MATERIALS (abrasives, glass, crude pottery, etc.).
Gp. 5 : MISCELLANEOUS MATERIALS (leather, rubber, wood, paper, etc.).
Gp. 6 : INDUSTRIAL EQUIPMENT, other than electrical, including tools, excluding agricultural implements and machinery.
Gp. 7 : ELECTRICAL GOODS (electrical machinery and apparatus including telephone, telegraph and wireless).
Gp. 8 : AGRICULTURAL EQUIPMENT including tractors.
Gp. 9 : RAILWAYS, SHIPS, ETC. ("old means of transport," including railway plant, rolling stock, carts, carriages).
Gp. 10 : MOTOR-CARS, AIRCRAFT, ETC. ("modern means of transport," including bicycles, tyres, etc.).
Gp. 11 : SPIRITS, TOBACCO (alcoholic drink including beer and wine ; manufactured tobacco).
Gp. 12 : TEXTILES (Yarns, fabrics and finished goods, other than apparel, of textile materials).
Gp. 13 : APPAREL including footwear, buttons, umbrellas, etc.
Gp. 14 : METAL MANUFACTURES, N.E.S.[1] (light metal products such as hardware, cutlery, instruments, except optical and musical ; watches, pots and pans, etc.).
Gp. 15 : BOOKS, FILMS, CAMERAS, ETC. (goods for the satisfaction of cultural and entertainment needs, including sport requisites, musical instruments, toys).
Gp. 16 : FINISHED GOODS, N.E.S. (furniture, leather and rubber manufactures n.e.s., jewellery, etc.).
N.C. : NOT CLASSIFIED, an item with varying composition, but of very minor importance, including all those commodities which either are not specified in the original returns or cannot be included in any of the sixteen groups above.[2]

A division into consumer and capital goods is not practicable,[3] and, moreover, does not seem particularly relevant for a study of industrialisation. The historic fact that in the output of countries developing their manufacturing capacity a

[1]Not elsewhere specified.
[2]A more detailed account of the composition of each group is included in Appendix I.
[3]Certainly it is not possible to determine what proportion of electric lamps, paper or wood manufactures—to give a few examples only—goes into households and what proportion is used by industry.

gradual shift occurred in favour of capital goods [1] can well be explained by differences in "capital intensity" and in the "skill-ratio" between particular industries.[2] Even the notorious case of textiles being the first manufacturing industry established in a densely populated country might not hold good in future when the modern and more highly capitalised branches of that industry (*i.e.*, rayon, nylon, etc.) become predominant.[3]

Closely related to classification was the problem of rendering trade returns for different countries and different periods of time comparable. In view of the great differences between the various national classifications it was found unsatisfactory to use a "short-cut" method, and it became necessary to work on complete trade returns and regroup the various sections and items according to the classification adopted.[4] This created a linguistic problem, which, fortunately, was greatly reduced by the fact that five of the countries considered publish their returns in English, and a further three in French.[5]

The figures analysed exclude re-exports and transit trade. For English-speaking countries and Japan returns of "Exports of Domestic Produce" were taken, and for countries of Continental Europe "Special Trade" statistics were used ; [6] both terms are broadly equivalent. After a laborious process of checking and adjusting it appears that a satisfactory degree of accuracy has been obtained. (Some special points are discussed in General Notes in Appendix II).

All group totals have been converted into sterling at rates of exchange current in the respective years. For 1899 and 1913 par values were used, for other years average rates of exchange were chosen. The actual rates used are shown in Appendix IV.

[1] Cf. W. Hoffman, *Stadien und Typen der Industrialisierung*, Jena, 1931.

[2] Cf. A. J. Brown, *Industrialisation and Trade*.

[3] Although, broadly speaking, it is correct to note that in our classification Groups 1-5, in their aggregate, are predominantly manufactured materials, Groups 6-10 finished capital goods and means of transport, and Groups 11-16 consumer goods—that line of analysis, however, is not pursued in this paper.

[4] While the composition of such broad groups as "machinery" or "chemicals" greatly differs between the various national statistics, there is no reason to believe that different meanings are implied in such items as "pig iron" or "cotton yarns" ; at any rate the most that can be done is to check the detailed composition of each group in official returns and readjust the items, where necessary, according to the chosen classification.

[5] In this respect the publications of the International Tariff Bureau giving equivalents in English of all items specified in returns of other countries are of invaluable assistance.

[6] For details of sources cf. Appendix III.

TABLE I—VALUE OF EXPORTS

EXPORTS OF MANUFACTURED COMMODITIES

1899
£000

	Group I	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	N.C.	Total
U.K.	19,539	4,591	12,649	2,364	4,252	16,220	1,917	2,116	15,958	662	4,231	99,134	10,802	10,929	3 547	6,288	1,663	216,862
U.S.A.	5,252	12,778	6,521	929	7,131	9,582	1,798	3,354	4,515	740	2,224	5,670	1,432	7,958	1,573	2,340	632	74,429
France	2,215	3,425	7,155	2,842	7,303	3,040	266	188	1,343	577	10,491	33,744	15,396	5,112	6,518	5,068	455	105,138
Germany ...	6,911	5,056	18,111	4,325	12,291	8,140	1,119	—	3,078	586	2,636	29,891	14,651	16,814	11,415	12,863	477	148,364
Belgium ...	3,006	3,327	4,964	5,071	1,924	1,925	—	—	2,847	129	256	8,169	1,012	2,551	410	873	613	37,077
Italy	104	252	1,239	500	783	200	107	5	283	—	3,104	14,567	1,569	238	670	1,435	—	25,056
Sweden ...	2,459	75	528	760	1,074	508	13	26	89	4	13	130	25	405	61	267	15	6,452
Switzerland	93	266	1,115	73	163	1,273	552	16	55	5	192	15,680	654	4,816	313	860	—	26,126
Canada ...	63	14	93	12	505	90	—	348	50	40	97	132	53	85	133	133	213	2,061
India	1	6	2,112	11	2,419	—	—	—	11	—	64	10,212	128	83	62	63	39	15,211
Japan	—	1,212	874	46	202	6	—	—	16	—	90	5,665	312	142	45	1,175	185	9,970
Totals ...	**39,643**	**31,002**	**55,361**	**16,933**	**38,047**	**40,984**	**5,772**	**6,053**	**28,245**	**2,743**	**23,398**	**222,994**	**46,034**	**49,133**	**24,747**	**31,365**	**4,292**	**666,746**

TABLE II—VALUE OF EXPORTS

EXPORTS OF MANUFACTURED COMMODITIES

1913
£000

	Group I	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	N.C.	Total
U.K.	37,507	7,694	24,039	5,279	8,792	30,364	7,655	3,748	24,260	7,616	9,685	175,741	22,006	21,102	8,419	11,591	1,849	407,347
U.S.A.	14,780	32,644	10,562	3,376	13,047	22,749	5,286	7,383	7,211	8,485	2,408	10,937	6,863	14,013	6,364	4,284	1,880	172,272
France...	5,485	5,456	14,687	4,005	12,103	4,484	1,472	591	1,901	13,180	10,901	52,818	22,621	6,176	9,495	9,458	962	175,795
Germany ...	33,996	14,684	40,941	10,124	33,137	40,451	16,140	3,098	11,129	9,290	3,596	46,880	22,953	32,459	21,289	18,527	2,138	360,832
Belgium ...	8,093	8,186	8,033	5,990	3,945	3,302	—	—	4,834	1,443	201	14,733	1,658	2,917	675	1,377	1,275	66,662
Italy	35	502	3,260	687	1,203	893	411	20	458	3,054	4,034	24,900	4,184	1,175	1,740	2,029	—	48,585
Sweden ...	4,323	311	1,611	1,268	3,319	2,388	698	435	120	48	41	421	226	967	162	672	3	17,013
Switzerland	595	730	2,656	272	325	3,252	1,222	28	124	561	242	20,435	1,664	8,102	469	1,278	—	41,955
Canada ...	81	506	932	61	3,338	173	22	1,630	67	786	216	151	162	272	206	154	164	8,921
India	285	63	644	37	2,842	—	—	—	18	—	109	27,792	146	129	82	62	44	32,253
Japan	41	3,145	2,553	346	693	224	78	—	246	—	355	17,618	2,990	631	413	2,643	349	32,325
Totals ...	**105,221**	**73,921**	**109,918**	**31,445**	**82,744**	**108,280**	**32,984**	**16,933**	**50,368**	**44,463**	**31,788**	**392,426**	**85,473**	**87,943**	**49,314**	**52,075**	**8,664**	**1,363,960**

TABLE III—VALUE OF EXPORTS

EXPORTS OF MANUFACTURED COMMODITIES

1929
£000

	Group I	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	N.C.	Total
U.K.	47,761	15,333	35,765	10,434	17,927	46,637	19,671	3,303	31,563	24,207	20,415	213,152	27,053	25,559	20,388	17,970	2,439	579,577
U.S.A.	34,212	40,028	33,005	7,497	24,956	73,751	25,856	28,237	8,959	125,171	4,165	29,758	14,346	27,881	20,048	7,597	2,396	507,863
France	25,183	4,112	24,655	8,060	17,876	13,926	3,606	1,454	5,165	19,834	14,979	85,579	25,529	8,351	7,862	9,264	337	275,772
Germany ...	41,204	17,034	62,880	15,819	48,370	64,659	30,906	4,939	13,053	9,860	2,990	53,876	33,444	60,633	29,119	26,194	1,163	516,143
Belgium ...	31,341	9,929	9,216	15,479	7,957	4,712	2,420	222	5,572	6,824	578	26,956	6,252	4,227	1,704	2,583	3	135,975
Italy	301	638	5,424	1,603	1,666	2,268	977	45	1,288	6,575	3,339	52,965	9,474	1,052	1,694	2,362	—	91,671
Sweden ...	5,709	966	3,884	1,904	9,809	7,805	3,508	880	1,638	604	4	1,131	1,080	2,876	464	282	12	42,556
Switzerland	938	2,995	7,021	358	1,078	8,262	3,398	34	264	882	227	21,695	3,800	14,599	1,427	2,154	—	69,132
Canada ...	1,845	15,781	4,576	168	32,730	634	1,013	3,770	371	11,562	5,820	788	2,630	2,115	1,615	774	176	86,368
India	1,946	1,990	620	56	6,120	7	—	—	3	—	52	45,662	323	1,201	198	63	151	58,392
Japan	359	1,308	3,503	2,018	3,251	1,183	1,166	6	885	922	648	60,446	9,379	2,812	1,964	6,421	408	96,679
Totals ...	**190,799**	**110,114**	**190,549**	**63,396**	**171,740**	**223,844**	**92,521**	**42,890**	**68,761**	**206,441**	**53,217**	**592,008**	**133,310**	**151,306**	**86,483**	**75,664**	**7,085**	**2,460,128**

TABLE IV—VALUE OF EXPORTS

EXPORTS OF MANUFACTURED COMMODITIES

1937

£000

	Group I	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	N.C.	Total
U.K.	35,669	12,812	28,569	7,375	16,061	42,032	19,094	3,231	12,488	29,598	19,244	121,782	12,889	20,151	13,278	10,463	911	405,647
U.S.A.	40,780	20,742	26,164	5,392	15,054	59,879	23,867	15,100	5,518	83,804	2,880	11,991	4,986	19,575	12,681	4,517	1,069	353,999
France	15,403	2,566	17,545	2,546	8,761	5,600	2,146	509	2,211	8,830	9,664	23,479	3,726	3,908	5,910	2,240	309	115,353
Germany ...	38,957	9,570	58,805	12,210	25,025	58,489	25,369	4,048	13,123	20,192	1,782	31,456	12,620	57,150	20,174	15,759	415	405,144
Belgium ...	27,555	17,305	9,545	6,736	4,660	3,422	2,896	138	3,559	3,382	278	18,236	2,282	3,536	1,991	874	5	106,400
Italy	1,410	1,092	3,591	1,826	1,657	2,687	1,005	155	585	10,412	4,038	27,710	4,199	1,692	1,550	1,995	—	65,604
Sweden ...	9,110	1,445	2,013	974	9,991	8,508	3,386	741	3,143	1,222	7	877	312	2,954	319	170	7	45,179
Switzerland	579	3,270	8,018	261	439	7,691	2,120	18	69	953	211	11,111	1,746	13,431	745	1,097	—	51,759
Canada ...	2,095	28,729	4,354	168	28,970	1,928	1,568	2,212	333	7,881	3,852	1,203	2,854	1,912	1,310	350	86	89,805
India	1,975	2,041	470	79	5,418	15	—	—	2	—	50	27,252	281	202	270	63	160	38,278
Japan	5,721	1,324	5,239	2,431	4,703	5,304	3,240	87	2,619	2,969	771	65,888	12,921	5,933	4,361	6,485	457	130,453
Totals ...	**179,254**	**100,896**	**164,313**	**39,998**	**120,739**	**195,555**	**84,691**	**26,239**	**43,650**	**169,243**	**42,777**	**340,985**	**58,816**	**130,444**	**62,589**	**44,013**	**3,419**	**1,807,621**

TABLE V—VALUE OF EXPORTS

EXPORTS OF MANUFACTURED COMMODITIES

1950
£000

	Group 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	N.C.	Total
U.K.	96,933	59,141	119,087	38,699	56,588	258,053	140,934	45,152	83,867	301,498	50,139	349,924	47,788	95,720	45,154	54,423	7,703	1,850,803
U.S.A.	149,069	39,216	238,257	38,108	75,920	422,083	148,656	127,611	67,605	407,813	19,810	137,698	39,290	109,406	61,003	25,017	43,727	2,150,289
France... ...	101,090	13,194	72,385	19,244	37,894	58,536	30,394	7,053	22,132	68,028	39,558	185,022	27,082	36,581	21,629	16,454	491	756,767
Germany ...	80,177	27,434	76,435	14,653	12,566	84,280	26,047	16,007	11,292	39,532	1,606	32,829	2,516	62,954	24,631	15,746	18	528,723
Belgium ...	95,415	57,266	49,746	19,730	8,710	23,053	16,726	805	14,274	8,280	1,488	95,550	10,533	13,787	8,627	2,861	—	426,851
Italy	8,821	4,483	11,461	5,218	5,077	33,498	11,634	3,046	10,535	19,365	7,273	127,185	11,473	8,406	6,112	6,252	7	279,846
Sweden ...	18,397	4,246	9,516	3,317	48,584	46,494	14,572	2,978	25,972	4,951	251	3,001	1,259	11,776	1,309	1,448	2,076	200,147
Switzerland	2,267	21,396	47,097	1,029	2,900	64,518	19,966	285	1,418	1,817	4,239	38,133	6,412	71,914	6,491	7,092	—	296,974
Canada ...	16,672	102,477	30,671	14,035	176,279	9,502	5,772	29,447	12,944	18,328	14,308	5,673	2,755	4,566	2,676	720	1,308	448,133
India	578	378	2,125	488	15,266	310	—	—	27	498	1,559	188,144	1,953	978	922	840	561	214,627
Japan	26,203	20,478	5,594	4,724	2,970	7,707	4,009	170	9,908	2,893	196	118,926	9,427	11,532	8,183	12,173	377	245,470
Totals ...	**595,622**	**349,709**	**662,374**	**159,245**	**442,754**	**1,008,034**	**418,710**	**232,554**	**259,974**	**873,003**	**140,427**	**1,282,085**	**160,488**	**427,620**	**186,737**	**143,026**	**56,268**	**7,398,630**

II

Tables I to V show the results of this re-classification. Each table relates to one of the five chosen years, and shows, for that year, the total manufactured exports of each of the eleven countries, classified into sixteen groups. All the subsequent analysis in this paper uses material derived from these tables.

It is no purpose of the paper to measure the change in the total volume of world trade. Nevertheless, it may be helpful to have a rough translation of value figures into volume figures. The index which has been concocted [1] for this purpose yields the results shown in Table VI.

TABLE VI

VALUE AND VOLUME OF MANUFACTURED EXPORTS

	1899	1913	1929	1937	1950
Value, £m. ...	667	1,364	2,460	1,808	7,399
Price Index ...	100	127	178	150	412
Volume Index ...	100	161	207	181	269

The increase between 1899 and 1950 (two years in which the terms of trade between manufactures and primary products were roughly similar) was at a cumulative rate of 2·0 per cent. per annum.

III

We come now to consider changes in the relative importance of the various groups of manufactured commodities entering into world trade. (Hereafter we shall use the term "world trade" for the total manufactured exports of the eleven countries, as shown in Tables I to V).

[1]The figure for 1913 is the combined index of the export and import prices of U.K. manufactures, as calculated by W. Schlote in *Entwicklung und Strukturwandlungen des englischen Aussenhandels*. The subsequent figures are averages of the official indices of export prices of American and British manufactures.

TABLE VII

PERCENTAGE SHARE OF EACH GROUP IN WORLD TRADE

Group	Short title	Annual Change (Trend)	1899	1913	1929	1937	1950
	Expanding.						
10	Motor-Vehicles, etc.	+0·232	0·4	3·3	8·4	9·4	11·8
6	Industrial Equipment	+0·140	6·1	7·9	9·1	10·8	13·6
7	Electrical Goods	+0·094	0·9	2·4	3·8	4·7	5·7
1	Iron and Steel	+0·050	6·0	7·7	7·8	9·9	8·1
8	Agricultural Equipment ...	+0·036	0·9	1·2	1·7	1·4	3·1
	Stable.						
3	Chemicals	+0·017	8·3	8·1	7·7	9·1	9·0
5	Misc. Materials	+0·011	5·7	6·1	7·0	6·7	6·0
2	Non-ferrous Metals	0·000	4·7	5·4	4·5	5·6	4·7
4	Non-metalliferous	—0·006	2·5	2·3	2·6	2·2	2·1
15	Books, Films, etc.	—0·019	3·7	3·6	3·5	3·5	2·5
	Declining.						
14	Metal Manufactures, n.e.s. ...	—0·021	7·4	6·5	6·1	7·2	5·8
9	Railways, Ships, etc.	—0·022	4·2	3·7	2·8	2·4	3·5
11	Drink and Tobacco	—0·026	3·5	2·3	2·1	2·4	1·9
16	Misc. Manufactures	—0·055	4·7	3·8	3·1	2·4	1·9
13	Apparel	—0·096	6·9	6·3	5·4	3·2	2·2
12	Textiles	—0·333	33·5	28·8	24·1	18·9	17·3
17	Not Classified		0·6	0·6	0·3	0·2	0·8
			100	100	100	100	100

Table VII shows what percentage each group was of world trade in each of the selected years. The groups are listed in order of their growth, *i.e.* in order of the average annual increase in their share of world trade. This could be found by comparing the share of a group in the first year and the last year. For example, if a group comprised 10% of world trade in 1899 and 13% in 1950, its share would have increased by 3%, and it would appear higher on the list than would a group which comprised 2% in 1899 and 4% in 1950. However, there are objections to selecting two years out of the five for this comparison. Accordingly, a regression line has been fitted to the five figures for each group, and the groups are listed in order of the slope of their regression lines, which is given in the first column of Table VII.

A further sub-division has been made in this Table, to show separately the groups which were sharply increasing their importance in world trade, the groups whose importance was sharply declining, and the groups whose importance was relatively unchanged, over the period of five decades.

One of the more remarkable features of the Table is the steadiness of its trends. On the whole, with one or two exceptions, the groups which are increasing increase all the time, from one column to the next, and those which are decreasing decrease all the time. The evidence is sufficient to support the conclusion that we are dealing with trends of some strength and importance. Were a similar Table to be constructed in 1960 it would be very surprising indeed if the groups which now appear as "expanding," "stable" or "declining" were substantially altered.

The expanding category consists exclusively of machinery and of iron and steel—using the term machinery in the widest sense to include motor vehicles, agricultural machinery, and all sorts of electrical and industrial equipment.

Iron and steel is an interesting case. Group 1 includes only the crude products of the forge, the smelter and the rolling-mill. Apart from machinery, world trade in finished iron and steel products (Group 14) is not increasing (*i.e.* it increases absolutely but not relatively). The trade in crude

products (Group 1) will doubtless continue to increase, since the location of these processes is largely confined, by geographical factors, to a few centres, from which the rest of the world will purchase increasingly as it grows richer.

The behaviour of Group 1 in 1950 may seem to test this comment, since the share of this Group was smaller in 1950 than in 1937. This, however, is easily accounted for by the shortage of steel in most countries in 1950. It is also this shortage which has pushed Group 14 down from the stable to the declining trades. In its absence, the trade in finished iron and steel products (excluding machinery) might be expected just to keep pace with the growth of world trade.

Iron and steel stands also in contrast to other mineral products. The trade in non-ferrous metals shows no tendency to grow faster than world trade in general. And the non-metalliferous products are, if anything a declining group, since so many newly industrialising countries turn at an early stage to the exploitation of any local earths suitable for building materials.

Chemicals are another interesting case. There is so much talk of a "chemical revolution" that one would expect this group to be expanding constantly in world trade. In fact, although the volume of trade in chemicals grew steadily, the group as a whole underwent a decline in its share in world trade in every decade except in the 'thirties.

Textiles and apparel, as could well be expected, show the greatest rates of decline, but it is worth noting that in the last period the decline in the importance of textiles was much milder than in the previous decades. Among the other groups in the declining category, Group (16)—comprising furniture, china, miscellaneous finished commodities made of leather or rubber (except tyres) and other small wares—should be observed.

Old means of transport (railway rolling stock and plant, ships, etc.), in spite of a steady downward trend until 1937, show a considerable increase in their share in the last period ; this can largely be explained by the extent of war damage to the rail and sea transport of Europe, but may also be due in

part to the intensified process of industrialisation. If, in future, more undeveloped countries enter upon the "first stages" of industrialisation, for some decades to come this group may well account for a higher share of world trade than in the inter-war period.

IV

Table VIII shows the relative importance of individual countries in world trade. They are listed in order of the increase in their share of trade between 1899 and 1937.

TABLE VIII
PERCENTAGE SHARE OF EACH COUNTRY IN WORLD TRADE

	1937 minus 1899	1899	1913	1929	1937	1950*
U.S.A.	+ 8·4	11·2	12·6	20·7	19·6	29·1
Japan	+ 5·7	1·5	2·4	3·9	7·2	3·3
Canada	+ 4·7	0·3	0·6	3·5	5·0	6·1
Sweden	+ 1·5	1·0	1·2	1·7	2·5	2·7
Belgium	+ 0·3	5·6	4·9	5·5	5·9	5·8
Germany	+ 0·2	22·2	26·4	21·0	22·4	7·1
Italy	— 0·1	3·7	3·6	3·7	3·6	3·8
India	— 0·2	2·3	2·4	2·4	2·1	2·9
Switzerland ...	— 1·0	3·9	3·1	2·8	2·9	4·0
France	— 9·4	15·8	12·9	11·2	6·4	10·2
United Kingdom ...	—10·1	32·5	29·9	23·6	22·4	25·0
		100	100	100	100	100

* If American military-aid exports in the form of vehicles, aircraft, tyres, wireless equipment, machine tools, etc. were excluded (shipments of fire-arms and ammunition are not included in the figures above) the U.S. share would fall to 27·7%, and the British rise to 25·5% of World Trade.

There are spectacular changes between 1899 and 1937. The rise of Japan and of the U.S.A., and the decline of the United Kingdom, are well known. But equally spectacular are the rise of Canada and the decline of France, which have attracted much less attention. The relative stagnation of India is also to be observed.

We shall come in a moment to analyse some aspects of these changes. But first we must observe the effects of the war of 1939-1945.

The figure shown for Germany in the 1950 column is not comparable with the figures shown in earlier columns, since it is for Western Germany only. Nevertheless, the share of Western Germany in world trade has certainly declined. Taking 1938 as 100,[1] the volume of exports from Western Germany in 1950 was only 94, while the indices for the U.K. and for France were respectively 175 and 173. German export prices have also risen less than the corresponding world average.

Between 1937 and 1950, every country, except Belgium, increased its share of world trade, at the expense of Germany and of Japan. To see how they fared, relatively to each other, it is necessary to eliminate both Germany and Japan for 1937 and 1950, and this is done in Table IX.

TABLE IX

PERCENTAGE SHARES, EXCLUDING GERMANY AND JAPAN

	Increase	1937	1950
U.S.A.	+ 4·7	27·8	32·5
France	+ 2·3	9·1	11·4
Switzerland	+ 0·4	4·1	4·5
India	+ 0·2	3·0	3·2
Canada	— 0·3	7·1	6·8
Sweden	— 0·6	3·6	3·0
Italy	— 1·0	5·2	4·2
Belgium	— 2·0	8·4	6·4
United Kingdom ...	— 4·0	31·9	27·9
		100	100

[1]United Nations, *Economic Survey of Europe in* 1950, p. 189.

Table IX shows the position clearly. The lion's share of the lost German and Japanese markets has gone to the United States and to France. The United Kingdom, in particular, while it has gained at the expense of Germany and of Japan, has lost ground in relation to its other competitors.

V

A country's share of world trade may decline for one or a combination of two reasons : (*a*) Its share of world trade in each group of commodities may remain the same, but the relative importance of the groups may alter ; or (*b*) its share of the individual groups may decline. For brevity, we shall refer to (*a*) as a change in the structure of world trade, and to (*b*) as a change in the competitiveness of a country.

It is possible to isolate these two causes. In order to do this we have to compute hypothetical shares of each country in World Trade on the assumption that, while the structure and value of World Trade were changing between any two years, all countries maintained their initial competitive position in each group. For any country the difference between this hypothetical share in Year II and its actual share in Year I is the share of trade which it has gained or lost through the change in the structure of world trade. And the difference between the hypothetical share and the actual share in Year II is the share of trade which it has gained or lost through its different competitiveness.

In this section we compare changes between 1899 and 1937. The next section compares 1937 and 1950.

Table X shows the results of the first comparison. The countries are listed in order of their gain or loss from competition.

It will be seen from Table X that the changing structure of world trade has had less effect on the relative position of trading countries than change competition. The changing structure of world trade was decisively important to Italy, to India and to Switzerland, where it accounts for the major part of a declining share in world trade. And it was also of great importance to the U.S.A., whose increased share of world trade

TABLE X

COMPARISON OF PERCENTAGE SHARE 1899 AND 1937

	Actual Share 1899	Actual Share 1937	Hypothetical Share	Due to Competition	Due to Structure	Total Change
Japan	1·5	7·2	1·0	+ 6·2	— 0·5	+ 5·7
Canada	0·3	5·0	0·5	+ 4·5	+ 0·2	+ 4·7
U.S.A.	11·2	19·6	16·2	+ 3·4	+ 5·0	+ 8·4
Sweden ...	1·0	2·5	1·3	+ 1·2	+ 0·3	+ 1·5
Italy	3·7	3·6	2·6	+ 1·0	— 1·1	— 0·1
India	2·3	2·1	1·7	+ 0·4	— 0·6	— 0·2
Belgium ...	5·6	5·9	5·7	+ 0·2	+ 0·1	+ 0·3
Germany ...	22·2	22·4	22·6	— 0·2	+ 0·4	+ 0·2
Switzerland ...	3·9	2·9	3·3	— 0·4	— 0·6	— 1·0
France	15·8	6·4	14·2	— 7·8	— 1·6	— 9·4
United Kingdom	32·5	22·4	31·0	— 8·6	— 1·5	—10·1

was due more to this factor than to her own competitiveness. But, to the four countries whose change of relative position is most spectacular—to Japan, Canada, France and the United Kingdom—the decisive factor was not the structure of world trade but their own capacity to compete.

Was competitive ability confined to one or two groups, or was it widely spread? Table XI gives the answer for five important countries. It is constructed by subtracting the share a country had in 1899 of world trade in a group, from the share it had in 1937. The last row shows the increase of its share of world trade as a whole, in so far as this is due to its competitiveness. The groups are listed in order of their growth between 1899 and 1937. This is not the same as their rate of growth between 1899 and 1950, so the categories "Expanding," "Stable" and "Declining" are a little different from those of Table VII.

TABLE XI

SHARE OF WORLD TRADE GAINED IN EACH GROUP—1899-1937

Group No.		By Japan	By Canada	By U.S.A.	By France	By U.K.
	Expanding Groups.					
10	Motor-Vehicles, etc.*	+ 1·8	+ 3·2	+22·5	—15·8	— 6·6
6	Industrial Equipment	+ 2·7	+ 0·8	+ 7·2	— 4·5	—18·1
1	Iron and Steel	+ 3·2	+ 1·0	+ 9·5	+ 3·0	—29·4
7	Electrical Goods	+ 3·8	+ 1·9	— 3·0	— 2·1	—10·7
	Total, Expanding Groups ...	+ 2·7	+ 1·9	+13·6	— 1·7	—22·9
	Stable Groups.					
5	Miscellaneous Materials... ...	+ 3·4	+22·7	— 6·2	—11·9	+ 2·1
2	Non-Ferrous Metals	— 2·6	+28·4	—20·6	— 8·5	— 2·1
3	Chemicals	+ 1·6	+ 2·4	+ 4·1	— 2·2	— 5·4
8	Agricultural Equipment ...	+ 0·3	+ 2·7	+ 2·1	— 1·2	—22·7
14	Metal Manufactures n.e.s. ...	+ 4·2	+ 1·3	— 1·2	— 7·4	— 6·8
15	Books, Films, etc.	+ 6·8	+ 1·6	+13·9	—16·9	+ 6·9
4	Non-Metalliferous	+ 5·8	+ 0·3	+ 8·0	—10·4	+ 4·4
	Total, Stable Groups	+ 2·6	+10·0	— 0·4	— 8·2	— 2·6
	Declining Groups.					
11	Drink and Tobacco	+ 1·4	+ 8·6	— 2·8	—22·2	+26·9
9	Railways, Ships, etc.	+ 5·9	+ 0·6	— 3·4	+ 0·3	—27·9
16	Miscellaneous Manufactures ...	+11·0	+ 0·4	+ 2·8	—11·1	+ 3·8
13	Apparel	+21·3	+ 4·7	+ 5·4	—27·1	— 1·6
12	Textiles	+16·8	+ 0·2	+ 1·0	— 8·2	— 8·8
	Total, Declining Groups ...	+14·7	+ 1·5	+ 1·0	—11·0	— 5·4
	Total Competitive Gain ...	+ 6·2	+ 4·5	+ 3·4	— 7·8	— 8·6

* In 1899 this group comprised mainly bicycles as motor-vehicles were still in an experimental stage. If we compare 1937 with 1913, however, the trend is not changed, except for the United Kingdom. The corresponding figures would then be :

Japan + 1·7 ; Canada + 2·9 ; U.S.A. + 30·4 ;
France —24·4 ; U.K. + 0·4.

Japan increased her share of world trade in every group except non-ferrous metals. But her greatest gains were in apparel, textiles, and miscellaneous non-metallic consumer goods. These groups were of declining importance in world trade, and it is interesting to observe that a new country can carve out for itself a large share of world trade by competing in groups against which the trends are moving.

The Canadian story is similar. Canada increased her share in every group, but it was mainly non-ferrous metals and paper that so largely increased her share of world trade.

United States competition was most powerful in motor cars, industrial equipment, iron and steel, and the group which includes films. Practically the whole of her gain was in groups which were expanding rapidly

Thus each of the three countries whose share increased most in World Trade advanced by means of improving its competitive position in a different category of commodities, *viz.* Japan in the declining, Canada in the stable and the U.S.A. in the expanding groups. This seems to be a very interesting illustration of the possibility of a simultaneous expansion of "old" and "new" manufacturing countries based on international specialisation and division of labour, according to the varying endowments in natural resources and factor-proportions.

The French share of trade declined in every group except two. The causes of the decline of French competitive power in the first half of the twentieth century still await detailed sociological analysis.

The United Kingdom increased her share of world trade in four small groups, but otherwise lost all round. Losses in the textile trades to Japanese competition are well known. What Table XI brings out, however, is that this loss was small in comparison to the heavy losses suffered in the iron and steel and engineering trades. The British share of these trades (groups 1, 6, 7, 8, 9, 10 and 14) was 39·0% in 1899, and had fallen to 19·6% in 1937. Notwithstanding the fate of textiles and all other commodities, if the United Kingdom had retained in 1937 the same share of trade in the iron and steel and engineering

trades as she held in 1899, her share of world trade would have fallen only from 32·5% to 31·3%, instead of to 22·4%, which was the actual figure in 1937.

What were the effects of these changes on the structure of trade of individual countries? Table XII provides an

TABLE XII

CHANGES IN THE STRUCTURE OF TRADE OF FIVE COUNTRIES

		Share in World Trade	Structure of Trade				
			Expanding	Stable	Declining	N.C.	Total
U.S.A.	1899	11·2	23·4	54·1	21·7	0·8	100
	1937	19·6	58·8	32·4	8·5	0·3	100
	Change	+ 8·4	+35·4	—21·7	—13·2	— 0·5	0
Japan	1899	1·5	0·1	25·3	72·8	1·8	100
	1937	7·2	13·3	18·4	68·0	0·3	100
	Change	+ 5·7	+13·2	— 6·9	— 4·8	— 1·5	0
Canada	1899	0·3	9·3	57·8	22·6	10·3	100
	1937	5·0	14·9	75·4	9·6	0·1	100
	Change	+ 4·7	+ 5·6	+17·6	—13·0	—10·2	0
France	1899	15·8	5·8	31·0	62·8	0·4	100
	1937	6·4	27·9	36·1	35·8	0·2	100
	Change	— 9·4	+22·1	+ 5·1	—27·0	— 0·2	0
U.K.	1899	32·5	17·7	18·6	62·9	0·8	100
	1937	22·4	31·2	25·0	43·6	0·2	100
	Change	—10·1	+13·5	+ 6·4	—19·3	— 0·6	0
World	1899	—	13·4	33·2	52·8	0·6	100
	1937	—	34·8	35·7	29·3	0·2	100
	Change	—	+21·4	+ 2·5	—23·5	— 0·4	0

illustration of changes in the composition of trade of the five countries which either gained most or show the greatest loss in their competitive position in World Trade between 1899 and 1937. The first column gives changes in their share in World Trade between these two years, while the remaining columns show the proportion of trade of each country accounted for by the Expanding, Stable and Declining categories of trade and the residual "Not Classified" items. The countries are listed in order of the improvement in their competitive power between 1899 and 1937, and the groups included in each category are the same as in Table XI.

A German trade enquiry in the inter-war period, quoted by E. Staley in *World Economic Development*,[1] while comparing changes in the competitive power in world markets of the U.S.A., Britain and Germany between 1913 and 1929, assumed a positive correlation between an improvement in competitive position, and concentration on exporting commodities which are expanding in world trade. Table XII does not confirm this hypothesis. The United States in 1937 had certainly a most "up-to-date" export structure, well ahead of actual changes in World Trade, but the same cannot obviously be said either about Japan or about Canada, both of whom show spectacular gains in their overall competitive position. In the structure of Japan's trade there was some movement from the declining and stable towards the expanding groups, but the change was rather mild and by 1937 the declining groups accounted for as much as 68% of her trade, while the composition of Canadian trade changed in favour of stable rather than expanding groups. France in her trade structure experienced, on the other hand, a sharp movement from the declining towards the expanding groups, approximately of the same order as the corresponding shift in World Trade ; this however, did not prevent a drastic decline in her competitive position in world markets. The United Kingdom lagged behind shifts in World Trade, but not to a very significant extent, in spite of such great losses in her competitive position.

[1]pp. 161-163.

It is thus quite possible for a country to "concentrate" on the expanding trades, and still lose its competitive position in all major markets, or, on the other hand, gain considerably in relative importance in World Trade without closely following changes in the composition of World Trade. Without analysing a country's competitive position in individual markets for groups of related commodities it is not possible to appreciate adequately the causes of changes in its relative importance in World Trade.

VI

We now examine the re-distribution of trade between countries which occurred between 1937 and 1950. In this section we exclude German and Japanese exports for these two years, and examine only the re-distribution between the other nine countries.

As Table IX showed, the most marked features of this period were the sharp revival of France, the continued progress of the United States, and the marked decline of Belgium and the United Kingdom. We confine the analysis of this section to these four countries.

First, Table XIII shows how far their changed positions were due to the changed structure of trade, and how far to their own competitiveness. This Table is constructed in the same way as was Table X.

TABLE XIII

COMPARISON OF PERCENTAGE SHARES, 1937 AND 1950

	Actual Share 1937	Actual Share 1950	Hypothetical Share	Due to Competition	Due to Structure	Total Change
France	9·1	11·4	8·6	+ 2·8	— 0·5	+ 2·3
U.S.A.	27·8	32·5	30·4	+ 2·1	+ 2·6	+ 4·7
Belgium ...	8·4	6·4	7·5	— 1·1	— 0·9	— 2·0
U.K.	31·9	27·9	31·8	— 3·9	— 0·1	— 4·0

As before, the United States gained about equally from the movement of world trade towards the commodities in which it specialises, and from its competitiveness. Belgium, on the other hand, lost about equally from these two causes. 58% of Belgian trade is in three of the groups that declined in importance (iron and steel, non-ferrous metals and textiles), whereas the United States exports are not only less concentrated, but are also, in so far as they are concentrated, more specialised in products that expand relatively.

In the cases of France and of the United Kingdom, the gain and the loss are due mainly to competition. France seized the opportunity created by the German and Japanese disasters, while the United Kingdom failed to get the share of this trade which her position in 1937 would have seemed to merit.

Table XIV casts further light on the subject by showing what part of the trade in each group of commodities was gained or lost by each country. It is analogous to Table XI. The groups are listed in order of their expansion between the two years (the Japanese and German exports being omitted); the first column shows this expansion.

French recovery is very well spread, through all but three groups of commodities. Particularly interesting is her advance in the export of iron and steel, to a share of the world market slightly larger than that of the United Kingdom.

The United States advance is also well spread—though there are some notable declines, especially in agricultural equipment, electrical goods, vehicles, and non-ferrous metals.

Belgium declines in all but four groups, her performance being highly reminiscent of that of France in the earlier part of our period.

Britain also declines in all but four groups. But these four are not without interest: in agricultural machinery, electrical goods, vehicles [1] and non-ferrous metals, she succeeded

[1]The improvement in the British and the corresponding worsening in the American position in the markets for motor-vehicles is underrated as some of the U.S.A. military-aid exports included in Gp. (10) contain special machine tools, and possibly some naval craft, which are not separately specified in American trade returns.

TABLE XIV

SHARE OF TRADE OF 9 COUNTRIES GAINED, 1937

Group No.		Group Gain	By France	By U.S.A.	By Belgium	By U.K.
6	Industrial Equipment	+ 3·4	+ 2·1	+ 0·7	— 0·1	— 3·7
8	Agricultural Machinery ...	+ 1·6	+ 1·0	— 9·3	— 0·2	+ 6·3
7	Electrical Goods	+ 1·5	+ 4·0	— 4·4	— 0·9	+ 2·3
9	Railways, Ships, etc.	+ 1·4	+ 1·4	+ 8·5	— 6·8	— 9·6
10	Motor-Vehicles, etc.	+ 1·1	+ 2·2	— 8·3	— 1·3	+16·0
3	Chemicals	+ 0·9	— 5·0	+15·0	— 0·9	— 8·0
4	Non-Metalliferous	+ 0·1	+ 3·8	+ 5·9	—12·5	— 1·4
14	Metal Manufactures, n.e.s. ...	0·0	+ 4·6	— 1·9	— 1·3	— 2·8
16	Miscellaneous Manufactures ...	0·0	+ 4·0	+ 1·0	— 1·5	— 0·8
13	Apparel	— 0·4	+ 7·0	+11·4	+ 0·2	— 6·5
5	Miscellaneous Materials ...	— 0·7	— 0·7	+ 1·3	— 3·1	— 4·4
15	Books, Films, etc.	— 0·7	— 1·4	+ 6·3	+ 0·4	— 5·6
11	Drink and Tobacco	— 1·1	+ 4·5	+ 7·1	+ 0·4	—11·6
12	Textiles	— 2·0	+ 6·8	+ 7·3	+ 1·0	—19·0
2	Non-Ferrous	— 2·5	+ 1·5	—10·0	— 0·2	+ 5·4
1	Iron and Steel	— 3·2	+ 9·3	+ 0·2	— 1·0	— 6·7
	Total Competitive Gain ...		+ 2·8	+ 2·1	— 1·1	— 3·9

in capturing a part of the market formerly served by the United States. There are also notable losses : in industrial equipment, railway and shipbuilding, and iron and steel ; in chemicals ; and in apparel and textiles.

It should be noted that a country's share of World Trade may diminish either because its exports have increased in volume by less than total World Trade, or because it is selling at prices which have increased less (or fallen more) than the

corresponding world averages. (The latter normally implies an elasticity of demand less than unity).

It is clear that the changes in relative position which we have just analysed are due to both these causes. On a 1937 basis, the export prices (total exports, not manufactures only) of the U.K., the U.S.A., France and Belgium were respectively 271, 305, 315 and 369.[1] If these price indices are applied to their exports of manufactures, the corresponding indices of volume come out respectively at 169, 199, 209, and 109. That is to say in comparison with the U.S.A. and France the U.K.'s share declined both because of lower prices and of lower quantities [2] (but no conclusion should be drawn about elasticity of demand because the full effects of devaluation had not been exhausted in 1950). The French increase is due both to higher prices and to higher quantities. And the Belgian decline is due entirely to failure to expand quantities.

VII

It is not intended to generalise about long-run economic trends or to formulate "laws" of economic development on the basis of this investigation. It seems useful, however, in conclusion to emphasise a few characteristic points :

(1) Over the last fifty years, changes in the structure of World Trade in manufactured articles and in the competitive position of the major exporting countries were of a fundamental nature.

Each of the three countries which gained most in their relative importance in world trade—U.S.A., Japan and Canada—advanced by means of improving its competitive position in different groups of commodities. It is characteristic that the American advance was mainly in the expanding, that of Canada in the stable, and that of Japan in the declining groups ; an explanation in each of these cases seems to be provided by comparative advantages in the opportunity costs of production due to natural endowments and factor-proportions.

[1] cf. *International Financial Statistics*, July, 1951.

[2] If we take other countries into consideration, British export prices are definitely among the lowest, while the increase in Britain's volume of manufactured exports probably just kept pace with the average increase for the nine countries.

(2) Changes in the relative position of countries in World Trade were not so much due to structural shifts in world demand for exports as to each country's ability to compete in markets for individual groups of commodities. In particular the sharp deterioration of both the British and French position between 1899 and 1937 was predominantly due to failure of either country to maintain its relative position in most of the markets.

(3) In the period considered there was no clear correlation between changes in the structure of trade of individual countries (*e.g.* concentration on expanding commodities) and their percentage shares in World Trade in manufactures.

(4) Between 1937 and 1950 all major exporters, except Belgium, benefited by the post-war decline in German and Japanese competitive power so as to increase their share in World Trade. But when we compare competition between the remaining nine countries, it is apparent that not only Belgium but also the United Kingdom suffered a considerable relative decline, while both the U.S.A. and France improved their comparative position considerably.

The U.S.A. enjoyed special post-war advantages but the French recovery is quite remarkable.

(5) Between 1899 and 1937 the main reason for the fall of Britain's share in World Trade in manufactures was her failure to compete in markets for iron and steel and the engineering products including vehicles. From 1937 to 1950 there was a considerable improvement in some of these markets, notably in motor-vehicles, even if Germany and Japan are left out of the picture. Moreover, the relative British failure in 1950 to compete successfully in value terms with other countries for markets lost by Germany and Japan was due partly to British export prices having risen less than the world average. Nevertheless a closer analysis of the post-war British position in terms of competitive power in world markets is not particularly hopeful and the long-run outlook remains uncertain.

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APPENDIX I

CLASSIFICATION OF MANUFACTURED COMMODITIES

The definition of a manufactured commodity is based, as closely as possible, on Class III (Articles Wholly or Mainly Manufactured) of the British Export and Import Lists, 1950.

Major differences :

Excluded :

(1) Coke and Manufactured Fuel. (Gp. A of British Classification).

(2) Refined Petroleum (sub-group of Gp. P—Oils, Fats and Resins, Manufactured).

(3) Arms, Ammunition and Military and Naval Stores (sub-group of Brit. Gp. U—Miscellaneous Articles Wholly or Mainly Manufactured).

Included, in addition to Class III.

Alcoholic Drink and Manufactured Tobacco (specified in British Class I—Food, Drink and Tobacco).

GROUPING.

Gp. 1 : *Iron and Steel.*

Intermediate products and manufactured materials : pig iron ; ingots, bar, blooms, etc. ; sheets, plates and wire ; pipes, fittings, rough castings and forgings ; constructional iron and steel (*excludes* : rails and railway plant ; nails, bolts and nuts, screws, etc.).

Gp. 2 : *Non-Ferrous Metals.*

Intermediate products and manufactured materials (Cf. Gp. 1).

Gp. 3 : *Chemicals and Allied Products.*

All manufactured chemical agents and materials, including dyes, colours, paints and tanning extracts ; prepared medicines ; soap, perfumery and cosmetics ; glue and size ; candles and matches ; essential oils ; manufactured fertilisers.

Gp. 4 : *Non-Metalliferous Materials.*

Manufactured stones and abrasives ; glass and glassware ; bricks, tiles and other crude pottery ; cement, plaster, mortar, etc. ; manufactures of asbestos, mica and asphalt ; prepared chalk, etc.

Gp. 5 : *Miscellaneous Materials.*

Leather including tanned hides and skins, etc. ; rubber sheets, thread, hose and tubing ; ebonite rods, etc. ; all types of wood manufactures *except* furniture ; paper, cardboard and manufactures thereof *except* boxed stationery, books and all printed matter ; casein, celluloid and other plastic materials.

Gp. 6 : *Industrial Equipment (other than electrical).*

Machines and appliances for industry, including mining and processing, but excluding domestic appliances ; tools other than agricultural ;

miscellaneous parts and accessories of machinery including wooden spindles, type, printing blocks, etc.

Gp. 7 : *Electrical Machinery and Equipment.*

Includes telegraph, telephone and wireless apparatus, electric lamps and domestic appliances, (*e.g.* vacuum cleaners, washing machines, refrigerators), insulated wire and electric carbons.

Gp. 8 : *Agricultural Equipment.*

Agricultural machinery and implements, including axes, spades, shovels, etc. ; tractors.

Gp. 9 : *Railway Plant and Rolling Stock, Ships and Vehicles, n.e.s.*

(old means of transport).

Gp. 10.: *Motor Vehicles and Bicycles.*

(new means of transport) including tyres and car engines.

Gp. 11 : *Alcoholic Drink and Manufactured Tobacco.*

Beer, wine, spirits ; cigars, cigarettes and prepared tobacco.

Gp. 12 : *Textiles.*

Yarns and fabrics of all textile materials including artificial fibres ; rope, cordage and nets ; sacks, table and bed linen and similar manufactures, other than apparel (*excludes* oil-cloth, linoleums, etc.).

Gp. 13 : *Apparel.*

Outer garments ; hosiery and all types of underwear ; hats and caps ; gloves and footwear of all materials ; buttons and soft haberdashery ; umbrellas, walking sticks, ornamental feathers, etc.

Gp. 14 : *Metal Manufacturers, N.E.S.*

Springs, chains, anchors ; metal gauze and wire manufactures ; nails, bolts and nuts, screws and all types of hardware ; tanks, vats and other containers ; kitchen utensils and cutlery ; stoves, radiators, etc. ; clocks and watches ; instruments other than electrical, optical and musical ; meters ; sewing machines, miscellaneous metal manufactures including needles, pins, etc.

Gp. 15 : *Goods for the Satisfaction of Cultural Needs and Entertainment.*

Books, periodicals, maps and all printed matter ; agendas, notebooks and boxed stationery ; pens, pencils, and other stationery not of paper ; toys, games and sport goods ; gramophones and musical instruments ; cameras, optical instruments, films and photographic paper ; paintings and works of art.

Gp. 16 : *Finished Commodities, N.E.S.*

Manufacturers of leather n.e.s. including travelling requisites ; furniture, picture frames and mouldings ; rubber manufactures, n.e.s. ; china and other fine pottery ; manufactures of plastics, n.e.s. ; manufactures of straw, esparto, rush, cane, etc., *except* hats ; brooms and brushes ; jewellery, goldsmith's and silversmith's wares ; small wares (*e.g.* combs, ivory manufactures) ; oil-cloth, linoleum.

APPENDIX II

GENERAL NOTES

YEARS.

For all countries calendar years are used with the following exceptions :

U.S.A., 1899 = 1st July, 1899—30th June, 1900 ;
U.S.A., 1913 = 1st July, 1913—30th June, 1914 ;
Canada, 1899 = 1st July, 1899—30th June, 1900 ;
Canada, 1913 = 1st April, 1913—31st March, 1914 ;
Canada, 1929 = 1st April, 1929—31st March, 1930 ;
Canada, 1937 = 1st April, 1937—31st March, 1938 ;
India, 1899 = 1st April, 1899—31st March, 1900 ;
India, 1913 = 1st April, 1913—31st March, 1914 ;
India, 1929 = 1st April, 1929—31st March, 1930 ;
India, 1937 = 1st April, 1937—31st March, 1938.

TERRITORIAL CHANGES.

No adjustments are made for territorial changes except for the separation of Burma from India in 1937.[1]

1899. SOME DIFFICULTIES OF CLASSIFICATION.

As can be expected trade returns for 1899 are not very detailed, even if allowance is made for the fact that a great number of commodities now traded in large quantities was not produced at the time at all. For most of the countries it is not possible to divide non-ferrous metals into manufactured materials (Gp. 2) and finished commodities (Gp. 14) with the same degree of accuracy as in other years. There is some over-rating of Gp. 6 in relation to both Gp. 7 and Gp. 8, as electrical machinery is not separately specified in British, German and Belgian returns, and the same applies to agricultural machinery as far as Germany and Belgium are concerned. The major exporting countries do not specify optical instruments separately which tends to under-estimate Gp. 15 in relation to Gp. 14. On the other hand, the fact that India, even in 1950, includes all machinery in one item, is of no consequence, as her exports of capital goods are still completely negligible. In addition to the points mentioned German trade returns for 1899 are insufficiently detailed for finished metal goods and leather manufactures which involves some over-rating of Gp. 14 in respect of Gp. 6 and Gp. 16 in relation to Gp. 13.

Although transit is excluded from special trade returns in Belgian statistics, it is pointed out that a considerable amount of commodities in transit among those on the Free List was, owing to inaccurate entries by traders, included in Special Trade returns ; this also applies to 1913. Apparently, however, the commodities in question were mainly raw materials.

[1] In 1950 data for India exclude both Burma and Pakistan; in previous years the figures for India refer to the sea-borne trade of British India and Burma.

On the whole, Belgian trade returns for both these years are less detailed than returns of other countries; electrical equipment is not stated separately even in 1913, and a fairly large item *quincaillerie et mercerie* (hardware and haberdashery) had to be included with "Not Classified" commodities.

Only in a few cases in 1899 and 1913, where this could safely be done by reference to nearest years, a correction has been applied (*e.g.* for electrical instruments, U.S.A., 1899).

All these points are not, however, of major importance for the type of investigation undertaken, and no major inaccuracy appears involved in including 1899 in a study of long-run trends in the composition of trade.

Special Trade.

Instead of using the term "exports of home produce (and manufacture)" continental countries of Europe refer to "special trade." Re-exports from bonded warehouses and goods in transit were consistently excluded from these returns, but the practice of different countries greatly varied in relation to "improvement trade." This type of trade, as a rule, included either goods imported on a temporary basis and then re-exported after a degree of manufacture or repair, or goods sent for a similar purpose abroad. In the unfinished textiles this trade was quite considerable, and even in metals and vehicles not negligible. An International Convention concluded about 1930 stipulated that all this type of trade should be included in Special Trade returns.

The French returns before 1914 give separate value figures for improvement trade, and it was possible to include them; the same applies to Italy. Swiss returns, on the other hand, even for 1929 state only quantities of improvement trade, and accordingly the data for Switzerland for the first three years are under-estimated. Germany until recently included improvement trade on "home account" only, and thus figures for pre-war Germany are also under-rated, but to a much smaller degree than those for Switzerland. The Swedish improvement trade was negligible, while Belgium included most of this type of trade in Special Trade returns in 1913, but presumably not in 1899.

Returns for 1950.

The Swedish monthly returns include only some 95% of commodities traded, and are considerably less detailed than annual returns. In a few cases a correction based on annual data for 1948 was made, but, on the whole, the information available was adequate for our purpose.

The total of Indian returns is also slightly under-rated, and some of the other national returns contain only "provisional" figures, but these are seldom subject to important corrections in future publications.

The German trade returns exclude inter-zonal trade. The American returns for 1950 contain a number of "Special Category" items which are not specified in detail. A major item of this type, as far as can be ascertained, includes in addition to motor vehicles and aircraft for military purposes, also some special machine tools, and possibly ships. This item has been included in Gp. 10, and this probably involves some over-rating of American Gp. 10 in relation to Gp. 6 and perhaps also Gp. 9.

APPENDIX III

SOURCES OF STATISTICAL DATA

UNITED KINGDOM.

1899—*Statistical Abstract* for the United Kingdom from 1895 to 1909 ;

1913, 1929 and 1937—*Annual Statement of the Trade of the United Kingdom* ;

1950—*Trade and Navigation Accounts*, December, 1950.

UNITED STATES.

1899/1900—*Statistical Abstract* for the U.S.A., 1908 ;

1913/14, 1929 and 1937—*Foreign Commerce and Navigation of U.S.A.*

1950—*Exports of Domestic and Foreign Merchandise*, 1950.

FRANCE.

1899 and 1913—*Tableau Général du Commerce et de la Navigation de la France* ;

1929, 1937 and 1950—*Statistique Mensuelle du Commerce Exterieur de la France.*

GERMANY.

1899, 1913—*Auswärtiges Handel des Deutschen Zollgebiets* ;

1929—*Monatliche Nachweisen über den Auswärtigen Handel Deutschlands*, December, 1930, and *Der Auswärtige Handel Deutschlands im Jahre*, 1929 ;

1937—*Monàtliche Nachweise, etc.*, December, 1937 ;

1950—*Der Aussenhandel der Bundesrepublik Deutschlands*, December, 1950.

BELGIUM.

1899 and 1913—*Tableau Général du Commerce de la Belgique avec les Pays Etrangers* ;

1929—*Tableau Annuel du Commerce avec les Pays Etrangers* ;

1937 and 1950—*Bulletin Mensuel du Commerce Exterieur*, etc. for December, 1937 and 1950.

ITALY.

1899 and 1913—*Movimento Commerciale del Regno d'Italia* ;

1929 and 1937—*Statistica del Commercio Speciale di Importazione e di Esportazione*, 1930 and 1938 ;

1950—*Statistica del Commercio con l'Estero*, June-July and December, 1950.

SWEDEN.

1899—*Bidrag till Sveriges Officiella Statistik, F/Handel . . .*

1913, 1929 and 1937—*Handel Berättelse för Ar*, 1913, 1929, 1937 ;

1950—*Manadsstatistik över Handeln*, January, 1951.

SWITZERLAND.

1899, 1913 and 1929—*Statistique du Commerce de la Suisse avec l'Etranger* ,

1937—*Statistique Annuelle du Commerce Exterieur de la Suisse* ;

1950—*Statistique Mensuelle du Commerce Exterieur de la Suisse*, December, 1950.

CANADA.

1899/1900 and 1913/14—*Report of the Department of Trade and Commerce* ;

1929/30, 1937/38 and 1950—*Trade of Canada.*

INDIA.

1899/1900—*Annual Statement of the Trade and Navigation of British India* ;

1913/14, 1929/30 and 1937/38—*Annual Statement of the Sea-Borne Trade of British India* ;

1950—*Accounts Relating to the Sea-Borne Trade and Navigation of India,* December, 1950 and March, 1950.

JAPAN.

1899, 1913 and 1929—*Foreign Trade of Japan, A Statistical Survey* ;
1937—*Monthly Returns of Foreign Trade of Japan,* December, 1937 ;
1950—*Detailed Import and Export Statistics of Japan.*

APPENDIX IV

EXCHANGE RATES

	1899	1913	1929	1937	1950
United States ($ to £)	4·8	4·8	4·85718	4·94436	2·8
France (frcs. to £)	25·0	25·0	124·01812	124·75461	979·104
Germany (marks to £)	20·339	20·0	20·39875	12·29654	(Values in $)
Belgium (frcs. to £)	25·0	25·0	154·522	146·4755	140·868
Italy (lire to £)	25·0	25·0	92·7075	93·955	1,750·000
Sweden (kronor to £)	18·0	18·0	18·13312	19·395	14·490
Switzerland (frcs. to £)	25·0	25·0	25·19156	21·42352	12·1114
Canada ($ to £)	4·865	4·865	4·8925	4·94368	3·0436
India	15·0 (rupees to £)	(Values in £)	17·8845 (pence to rupees)	18·120	13·3336 (rupees to £)
Japan (pence to yen)	24·333	24·500	22·751	13·988	(Values in $)

Sources : 1899 and 1913, B.o.T. *Statistical Abstract for Principal and other Foreign Countries,* Nos 27 and 37 and *Accounts relating to Trade and Commerce of Certain Foreign Countries, etc. up to December, 1913.* 1929 and 1937 : *The Banker's Almanac and Yearbook,* 1948-49. 1950 : *International Financial Statistics,* January, 1951.

An Investigation of Hedging on an Organised Produce Exchange[1]

I

The practice of "hedging," by buying and selling futures contracts on organised produce exchanges, enables manufacturers and merchants to cover themselves against adverse movements of prices of raw materials in which they deal. The hedging facilities have always been recognised as one of the principal justifications for the existence of organised produce exchanges, even by those who look upon these institutions with disfavour. It is also generally recognised that the cover against unfavourable price movements that is provided by hedging may not always be perfect or sufficient. The hedger may be left with a balance of profit or loss on his hedged transaction—the cover may be too much or too little. It is the object of this note to attempt to give some indication of the extent of the inaccuracies in hedging on the pre-war cotton market in Liverpool.

In organised produce exchanges there are two related markets—the "spot" (or "cash") market in which the actual commodity is bought and sold ; and the "futures" market in which highly standardised contracts for future delivery are negotiated. Hedging consists of balancing an open position in the spot market by an open but opposite position in the futures market. Thus if a processor or dealer buys a quantity of the commodity he takes up a "long" position in the spot market, and he is exposed to the risk of loss should the price fall before he sells. He hedges by selling a futures contract of the same quantity, thereby taking up a "short" position in the futures market. When he sells the commodity in the spot market he concludes his transactions by buying back the futures contract he had previously sold as a hedge. (The "short-seller" in the spot market—*e.g.*, a manufacturer who

[1]I am much indebted to Miss A. H. Dicken of the Economics Research Division of the London School of Economics for assistance in the compilation of the statistics and for useful suggestions for their presentation ; and to the Division for making this assistance possible.

undertakes to deliver at a future date without having the necessary supplies when he gives the undertaking—is in the opposite position : he buys a futures contract as hedge against the risk of a rise in price before he obtains the necessary supplies).

If the costs of holding stocks of the commodity and the costs of dealing in the two markets are omitted, the hedger finishes with neither profit nor loss only when the prices in the two markets have moved in the same direction and by the same amount. Only then is his loss (or profit) on his spot dealings exactly compensated for by an equivalent profit (or loss) on his futures dealings. In fact the two prices rarely move precisely in step with each other, and the hedger is usually left with a balance of profit or loss. Expressed differently, the outcome to the hedger depends upon the relationship (*i.e.* difference) between the spot price and the futures price at the opening and closing dates of the set of transactions. If the difference between the two prices is the same at the two dates, the hedge is perfect and the hedger neither loses nor gains on balance. Any change in the difference between spot and futures prices (called the "basis" in the trade) produces a loss or gain for the hedger.

The basis may change for a variety of reasons. Some changes in basis are connected with the technicalities of the futures contract. Others, and probably the more important ones, are due to the fact that the two markets, spot and futures, are not indentical though they are related ; and that arbitrage transactions (through time) between the two markets cannot assure a rigid and unchanging relationship between prices in them. Thus for example if there is a tightness of immediate supplies in the spot market and promise or expectations of easier supplies in the near future, spot prices are likely to increase relatively to futures prices. On the other hand futures prices are likely to advance relatively to spot if, towards the end of a crop-year, the new crop looks unpromising. Supply and demand conditions do not affect the two markets equally, and changes in these conditions may bring about changes in the basis. Arbitrage operations affecting the two

markets (effected by accumulating and carrying stocks and selling futures ; or by liquidating stocks, deferring consumption and buying futures) may mitigate but cannot entirely prevent divergent or unequal movements in the two markets.

The practice of hedging is founded upon the assumption that the prices in the two markets are likely to move in fairly close correspondence with each other, so that changes in basis are relatively small. The investigation of price movements in selected sample periods has been made in order to test the validity of the assumption.

II

Before turning to an account of the investigation and the findings it may be useful to tabulate possible hedging situations, and the results to the hedger in each case.

It will be seen that there are four pairs of symmetrical situations : Types 1A and 2A, 1B and 2B, 1C and 2C, and 1D and 2D. These pairs may be called, respectively, perfect hedges, over-compensating hedges, under-compensating hedges, and aggravating hedges. With perfect hedges neither long nor short interest in the spot market suffers any loss. The cover is complete. The hedger is compensated for any loss but forfeits any profit arising from price movements in the spot market. With over-compensating hedges the loser in the spot market becomes, with hedging, a net gainer, and *vice versa*. With under-compensating hedges the loser (or gainer) in the spot market remains a loser (or gainer) but a smaller loser (or gainer) in the hedged position. The aggravating hedge is a special kind of under-compensating hedge. The loser (or gainer) in the spot market remains a loser (or gainer) in the hedged position, but his loss (or gain) is greater with hedging than without it.

It would be futile and unreasonable to hedge as a means of risk reduction if all hedges were of the aggravating type and were known to be so. On the other hand, if all hedges were either perfect or under-compensating, and known to be so, hedging would be a useful and reliable method of risk

TABLE I

CLASSIFICATION OF HEDGING SITUATIONS

Type	Price Movements		Results			
			to one who is "long" in the spot market		to one who is "short" in the spot market	
	Spot Price	Futures Price	Unhedged	Hedged	Unhedged	Hedged
1A	Falls	Falls by same amount as spot	Loss	Neither profit nor loss	Profit	Neither profit nor loss
1B	Falls	Falls by greater amount than spot	Loss	Profit	Profit	Loss
1C	Falls	Falls by smaller amount than spot	Loss	Loss, but smaller than unhedged loss	Profit	Profit, but smaller than unhedged profit
1D	Falls	Rises	Loss	Loss, but greater than unhedged loss	Profit	Profit, but greater than unhedged profit
2A	Rises	Rises by same amount as spot	Profit	Neither profit nor loss	Loss	Neither profit nor loss
2B	Rises	Rises by greater amount than spot	Profit	Loss	Loss	Profit
2C	Rises	Rises by smaller amount than spot	Profit	Profit, but smaller than unhedged profit	Loss	Loss, but smaller than unhedged loss
2D	Rises	Falls	Profit	Profit, but greater than unhedged profit	Loss	Loss, but greater than unhedged loss

reduction. With over-compensating hedges the position is not clear-cut. Where price movements are over-compensating, firms who would have gained without hedging become net losers with hedging. And the amount of the loss of the loser with hedging may be smaller or greater than the amount of the loss of the (different) loser without hedging, depending upon the extent of the over-compensating movements. If the losses were *smaller* with hedging than without it, over-compensating hedges transform larger losses and gains into smaller gains and losses ; and if all hedges were of this type and known to be so, the practice of hedging would still offer opportunities of risk reduction to dealers who are uncertain about price fluctuations and anxious to minimise or avoid the consequences of particularly unfavourable price changes in the spot market. On the other hand if over-compensating price movements produced greater gains and losses than those without hedging, the practice would not commend itself to the type of dealer described.

III

The statistical analysis of the results of hedging in cotton futures on the Liverpool Cotton Exchange has been limited to two periods, each of two years : August, 1930 to July, 1932, and March, 1938 to February, 1940. For each period dealings in two futures contracts have been selected : in the American Middling contract for both periods, in the Egyptian Sakellaridis contract for 1930/32, and in the Egyptian Uppers contract for 1938/40. There are thus four samples. The two periods have been selected because in each there were major fluctuations in cotton prices. The periods include such sharply disturbing events as the departure of several countries from the gold standard and the outbreak of the second world war. The first period was one of falling prices on balance, and the second period one of rising prices ; but in both periods there were both rises and falls.

The data, analysed below, purport to show the results of hypothetical sets of dealings in the cotton markets. For each sample the following situations have been assumed and

their results calculated : On each Friday [1] within the period a spinner bought (or sold) cotton, of the description and grade forming the basis of the futures contract, at the closing price in the spot market.[2] He hedged by selling (or buying) an equivalent futures contract at the closing price on the same day. Eight weeks later he reversed his earlier transactions in the two markets, again at the closing prices. Since at any time there are several futures contracts for the same basic description of cotton, differing from one another only in that they fall due in different stated future months, the hypothetical spinner is assumed to have selected the particular futures "month" (contract) by following a simple rule.[3] The rule ensures that the selected contract continued to have an active market for several weeks after the hedging transaction had been completed.

All results are expressed in hundredths of a penny per pound of raw cotton. In fact futures contracts were sold in units of substantial size. The American cotton contract, for example, was sold in multiples of 48,000 lbs. (·01d. per lb. equals £2 per contract in this case).

IV

The limitations of the findings are listed before the statistics are presented. First, the hedger is assumed to have dealt in raw cotton of the description and grade forming the basis of the particular futures contract (*e.g.*, American middling cotton "equal in colour to the standard and of not less than fair staple" for the American futures contract). If dealings in other descriptions, growths, or qualities of cotton had been assumed, additional profits or losses might have resulted. Secondly, the statistics are based upon the assumption that the hedger did not attempt to gauge which of the available futures "months" (contracts) would undergo the most favourable change in basis. Thirdly, the hedger is assumed to have

[1] Or Thursday if the Exchange was closed on Friday.

[2] All price quotations have been taken from *Tattersall's Cotton Trade Review*.

[3] For 8-week periods beginning on or before the tenth day of any month, the futures contract postulating delivery two months hence was selected ; after the tenth day, the futures contract falling due three months hence was taken.

refrained from switching his hedge from one "month" to another during the 8-week transaction period. Additional gains or losses might have resulted from speculations about the most appropriate "month" to use as hedge, or from switching. Tests have indicated that simple switches from one "month" to another would not have produced significantly different results, and that dealings in any other near-month futures contracts, rather than the particular ones selected, would not have changed the picture much. But on occasions the skilful hedger, if his anticipations were correct, could have secured much better results than those of the routine hedging incorporated in the present findings.

The costs of using the futures market are ignored in the calculations. Brokerage payments would have been from ·02 to ·04 pence per lb. for each transaction in the case of American contracts, according to the status of the spinner on the Exchange. The costs of storing cotton for eight weeks, which would have been incurred by our "long" spinner, are also omitted. Carrying costs would have varied a good deal; if they are calculated at 10% per annum on value, they would have been from ·02 to ·06 pence per lb. for each venture.

V

In Table II the results of hedging are classified into types on the basis of associated spot and futures price movements (as tabulated in Table I). Data are presented for each of the four samples, each of which is sub-divided according to the amount of the price change in the spot market.

Aggregating the results of the four samples the findings may be summarised as follows:

PERCENTAGE DISTRIBUTION OF HEDGED RESULTS

	With Spot Price Changes of less than 1d. per lb.	With Spot Price Changes of more than 1d. per lb.	All Cases
Perfect Hedges	5	2	4
Over-compensating Hedges	41	42	41
Under-compensating Hedges	45	56	48
Aggravating Hedges ...	9	—	7
	100	100	100

TABLE II

ANALYSIS OF RELATED MOVEMENTS OF SPOT AND FUTURE PRICES
(over 8-week periods)

Change in spot price (in hundredths of a penny per lb.)	Number of Times				TOTALS
	Futures price moved in same direction as spot price			Futures price and spot price moved in opposite directions	
	by the same amount as spot price	by a greater amount than spot price	by a smaller amount than spot price		
	Col. (1)	Col. (2)	Col. (3)	Col. (4)	
American (Middling) 1930/32					
1–29	0	9	10	8	27
30–59	2	13	13	0	28
60–99	6	14	10	0	30
100–149	1	3	10	0	14
150–199	0	5	1	0	6
Totals	9	44	44	8	105
American (Middling) 1938/40					
1–29	3	18	18	8	47
30–59	1	10	17	0	28
60–99	0	3	9	0	12
100–149	0	4	3	0	7
150–199	0	5	0	0	5
200 and over ...	1	3	0	0	4
Totals	5	43	47	8	103 (*b*)
Egyptian (Sakel) 1930/32					
1–29	0	6	4	5	15
30–59	0	8	7	0	15
60–99	0	9	12	0	21
100–149	0	7	12	0	19
150–199	0	4	16	0	20
200 and over ...	0	5	9	0	14
Totals	0	39	60	5	104 (*b*)
Egyptian (Upper) 1938/40					
1–29	2	20	16	5	43
30–59	1	11	23	1	36
60–99	0	6	3	0	9
100–149	0	1	4	0	5
150–199	0	1	3	0	4
200 and over ...	0	6	1	0	7
Totals	3	45	50	6	104

Notes : (*a*) Columns (1) to (4) indicate, respectively, "perfect," "over-compensating," "under-compensating," and "aggravating" hedges. (*b*) Two results, where there were no spot price changes, are omitted. The futures price movements were ·03 and ·18d., respectively.

The results were much the same for small and large spot price changes (particularly when it is remembered that aggravating hedges are in a sense under-compensating hedges—in both types the loser in the spot market remains the loser in the hedged position). Under-compensating hedges occurred somewhat more frequently than over-compensating hedges, particularly in the Egyptian samples. An analysis of the data reveals, further, that under-compensating hedges occurred relatively more frequently in association with increases than with decreases in spot prices, and again this was more marked in the Egyptian samples.[1]

It may be noted that aggravating hedges—7% of the total—were confined to spot price changes of less than 1d. per lb. In fact all except one of these cases occurred with price changes of less than ·30d. per lb. For the larger price changes the futures prices always moved in the appropriate direction, though the movement was generally too large or too small for perfect hedges.

The amount by which a change in futures prices exceeds or falls short of the related change in spot prices measures the imperfection or inaccuracy of the hedge. Table III sets out the average imperfection for the four samples sub-divided according to the amount of the change in spot prices. In each case the average imperfection is expressed in absolute terms as well as relatively to the average change in spot prices.

On the average hedging provided a high degree of cover, except for the smallest spot price changes. The effectiveness of hedging varied almost directly with the amount of spot price change ; the practice was least effective in times of small

[1] 45% of the hedged results associated with spot price decreases were under-compensating or aggravating, against 64% of the hedged results with spot price increases. For the American samples alone the percentages were 47 and 54 respectively ; and for the Egyptian samples, 41 and 75, respectively.

TABLE III

THE EXTENT OF IMPERFECTION IN HEDGING

Change in Spot Price (in hundredths of a penny per lb.)	Average amount of Imperfection (in hundredths of a penny per lb.)				Average amount of Imperfection as Percentage of Average Change in Spot Price			
	American Middling 1930/32	American Middling 1938/40	Egyptian Sakel 1930/32	Egyptian Upper 1938/40	American Middling 1930/32	American Middling 1938/40	Egyptian Sakel 1930/32	Egyptian Upper 1938/40
					%	%	%	%
0 to 29 ...	10	9	15	9	62	62	99	59
30 „ 59 ...	9	15	16	9	19	37	37	20
60 „ 99 ...	9	18	16	16	12	25	20	21
100 „ 149 ...	20	15	16	36	15	12	13	27
150 & over ...	23	19	26	27	13	9	14	12
All ...	11	13	19	13	17	25	17	21

movements in spot prices.[1] This finding speaks well for hedging, since the hedger is naturally particularly anxious that large spot losses should be effectively covered.

VI

In Table IV the results of the 416 individual hedged transactions are analysed in greater detail. The amount of the gain or loss, with hedging, is shown for each 8-week period, from the point of view of the spinner who, unhedged, would have been on the losing side of the spot market (*i.e.* the holder of stocks in periods of falling prices and the short-seller in periods of rising prices). Net gains are recorded for over-compensating hedges, and net losses for under-compensating and aggravating hedges. The net gains or losses indicate the amount of imperfection in the hedging.

[1]Further calculations indicate the following :

(*a*) The relative imperfection was greater for under-compensating than for over-compensating hedges. Under-compensating hedges were not only more frequent than over-compensating hedges, but also less accurate.

(*b*) The degree of imperfection was not on the average influenced by the direction of price movements.

TABLE IV

ANALYSIS OF RESULTS OF HEDGED TRANSACTIONS

(Results expressed from point of view of hedger who suffered loss in the spot market).

All amounts of gain or loss expressed in hundredths of a penny per lb.

Loss in the Spot Market	Number of times hedging resulted in											Totals
	Loss of					Loss or Profit less than 10	Profit of					
	60–69	40–59	30–39	20–29	10–19		10–19	20–29	30–39	40–59	60–69	
American (Middling) 1930/32												
1–29 ...	–	–	1	3	5	16	1	1	–	–	–	27
30–59 ...	–	–	1	1	–	21	3	2	–	–	–	28
60–99 ...	–	1	–	1	2	18	8	–	–	–	–	30
100–149 ...	–	1	2	4	2	3	2	–	–	–	–	14
150 & over ...	1	–	–	–	–	1	2	2	–	–	–	6
Totals ...	1	2	4	9	9	59	16	5	–	–	–	105
American (Middling) 1938/40												
1–29 ...	–	1	1	–	10	29	5	1	–	–	–	47
30–59 ...	–	–	2	5	8	9	3	–	–	1	–	28
60–99 ...	–	1	–	1	4	4	1	–	–	–	1	12
100–149 ...	–	–	–	1	2	3	–	1	–	–	–	7
150–199 ...	–	–	–	–	–	1	2	–	2	–	–	5
200 & over ...	–	–	–	–	–	1	1	2	–	–	–	4
Totals ...	–	2	3	7	24	47	12	4	2	1	1	103
Egyptian (Sakel) 1930/32												
1–29 ...	–	–	–	3	3	6	1	1	1	–	–	15
30–59 ...	–	–	–	–	4	3	6	1	–	1	–	15
60–99 ...	–	1	–	4	4	7	4	–	1	–	–	21
100–149 ...	–	–	–	5	5	5	3	1	–	–	–	19
150–199 ...	–	2	2	3	7	2	2	2	–	–	–	20
200 & over ...	–	3	3	2	1	1	–	2	–	2	–	14
Totals ...	–	6	5	17	24	24	16	7	2	3	–	104
Egyptian (Upper) 1938/40												
1–29	1	–	–	–	3	30	8	1	–	–	–	43
30–59	–	1	–	2	9	22	2	–	–	–	–	36
60–99 ...	1	–	–	–	–	6	1	–	–	1	–	9
100–149 ...	–	–	3	1	–	–	–	–	–	1	–	5
150–199 ...	–	2	–	–	1	–	–	–	–	1	–	4
200 & over ...	–	–	1	–	–	2	3	–	1	–	–	7
Totals ...	2	3	4	3	13	60	14	1	1	3	–	104

The contents of the table may be summarised as follows : of cases where the spot price changed by less than 1d. per lb., 55% showed imperfections of less than ·10d. per lb. and 85% of less than ·20d. per lb. ; [1] of cases where the spot price changed by more than 1d. per lb., 18% showed imperfections of less than ·10d. per lb., 50% of less than ·20d. per lb., and 75% of less than ·30d. per lb.

There were of course occasions when the results were unsatisfactory to the hedger. In the 27 aggravating hedges (indicated in Table II) the hedged loss was naturally greater than the unhedged loss. In addition there were 14 over-compensating hedges (out of 171) where the loss with hedging (of the gainer in the spot market) was greater than the loss without hedging (of the loser in the spot market). In all except three of these cases the results were associated with spot price changes of less than ·30d. per lb.

There were 24 results (6% of the total) where the imperfections in hedging were of the order of ·40d. per lb. or more. Of these 10 were in respect of 8-week periods commencing within the first eight weeks of the war. Eight were in respect of 8-week periods covering the end of one crop-year and the beginning of the next, when uncertainty about supplies is greatest. Apart from the results affected by the outbreak of the war, most of the imperfections in excess of ·40d. per lb. (10 out of 14 cases) occurred with spot price movements of over 1½d. per lb.

VII

A somewhat misleading impression will be gained if results of hedging are examined for isolated hedges alone (as in Table III). A spinner or merchant is likely to have several hedging transactions at different times within any period, so that the imperfections of individual hedges, some being to his advantage and others not, may tend to even out.

[1] For spot price changes under ·30d. per lb., imperfections were less than ·05d. per lb. in 30% of cases, and less than ·10d. per lb. in 60% of cases. For spot price changes between ·30 and ·99d. per lb., imperfections were less than ·05d. per lb. in 25% of cases, less than ·10d. per lb. in 50% of cases, and less than ·20d. per lb. in 70% of cases.

Calculations have therefore been made for the four samples to measure the extent to which individual gains and losses, with hedging, cancelled one another.

The calculations are based on the assumption that the hypothetical spinner had the same quantity of cotton at risk in each of the 8-week transaction periods in which the samples are subdivided. The spinner is assumed to have been "long" in the spot market, *i.e.* a holder of raw or processed cotton. The results of his operations are shown in the aggregate, comparing the results without hedging and the results with hedging. Three sets of calculations are presented in Table V in respect of each of the samples. The first shows the aggregated results

TABLE V

AGGREGATED RESULTS, WITH AND WITHOUT HEDGING, OF HYPOTHETICAL TRANSACTIONS (see text, above)
(in hundredths of a penny per lb. ; + = profit, — = loss)

Sample	Results (aggregated) of Transactions					
	in 8-week periods in which spot prices fell		in 8-week periods in which spot prices rose		in all 8-week periods	
	without hedging	with hedging	without hedging	with hedging	without hedging	with hedging
	Col. (i)	Col. (ii)	Col. (iii)	Col. (iv)	Col. (v)	Col. (vi)
American Middling 1930/32	—3782	— 115	+3136	+ 218	— 646	+ 103
American Middling 1938/40	—1547	— 313	+3868	— 71	+2321	— 384
Egyptian Sakel 1930/32	—6775	+ 51	+4625	+ 660	—2150	+ 711
Egyptian Upper 1938/40	—1365	— 86	+4847	+ 234	+3482	+ 148

of the transactions in 8-week periods in which spot prices fell (*i.e.* in which closing price was smaller than opening price). The second shows the results for 8-week periods in which spot prices rose. The third shows the aggregate results for all the 8-week transactions in each sample, and consists of summations of the first two sets of results.[1] (The results would have been reversed in the case of a spinner who was "short" in the spot market).

Though there were variations from sample to sample (and for sub-divisions of the two year periods of each sample) the general conclusion is that, for spot price increases and decreases considered separately, the hedging imperfections tended to balance out to a considerable extent,[2] leaving a relatively small remainder of under-compensated hedging (see Cols. (i) to (iv) in Table V), meaning that on balance the loser in the spot market remained a loser, but a very much smaller loser, with hedging.

A particular spinner is not likely to suffer adverse price changes in the spot market all the time. Even without hedging gains on favourable price movements will offset losses on unfavourable price movements. The results of such off-setting are shown in Column (v) of Table V, revealing that substantial profits or losses, without hedging, remained for our hypothetical spinner. Column (vi) of Table IV shows the results with hedging. Though, in the terminology adopted in this paper, hedging was on balance under-compensating (see preceding paragraph), the inaccuracies of hedging together with the (net) direction of spot price movements caused the net loser without hedging to become a net gainer with hedging (and *vice versa*)

[1]The results here are calculated on the basis that the hedger hedged every successive spot purchase.

[2]The following calculations relating to the American samples indicate the extent of the improvement brought about by the balancing of the imperfections on individual hedges. Without such balancing (*i.e.* without taking into account whether the imperfection was to the hedger's advantage or disadvantage) the average imperfection for spot price decreases, expressed as a percentage of the average spot price change, was 14% in 1930/32 and 39% in 1938/40 ; taking balancing into account the corresponding figures were 3% and 20%, respectively. For spot price increases the figures were 22%, without balancing, against 7%, with balancing, in 1930/32 ; and 19% against 2% in 1938/40.

in three samples out of four. However, this result is less significant than that the magnitudes of the gains and losses with hedging were much smaller than the gains and losses without hedging, and were, indeed, small in absolute terms. This last conclusion, if it were true generally as well as for the selected samples, would provide strong justification for the practice of hedging as a means of reducing the risks of loss from price fluctuations.

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